APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

POPOVA, M.I.; ZVEREV, V.A.

Use of torpedo from detonating blast hole for cleaning oil-well filters. Nefteprom. delo no.2:17-'63 (MIRA 17:7)

1. Krasnokamskoye neftepromyslovoye upravleniye.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.A.

SOV/144-59-9-1/15

AUTHOR: Vasil'yev, V.G., Docent, Acting Head of the Chair of Electrical Apparatus; and Zverev, V.A., Assistant

TITLE: Electronic Analoguing of the Hysteresis Characteristics of Magnetic Materials

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1959, Nr 9, pp 3-10 (USSR)

ABSTRACT: A number of articles dealing with electronic analogues (Kogan and Rozenblat, Refs 1, 2) have given a description of the circuits which are suitable for analoguing a simple rhomboic hysteresis loop. Two such circuits are shown in Figs 1 and 2. The circuit of Fig 1 consists of a limiter, a memory element and an amplifier. The insensitive zone or the width of the hysteresis loop is determined by the cut-off voltages of the limiter diodes, while the slope of the loop is determined by the output amplifier. The circuit of Fig 2 comprises an adding amplifier, a limiter and a memory device which is in the form of an integrator. If one of the above circuits is fitted with a functional converter, whose parameters are designed in accordance with the hysteresis loop of actual ferromagnetic material, it is possible to obtain a

Card 1/4

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

characteristic which would coincide with the actual function B = f(H). An example of such a device is shown in Fig 3. The system is based on the circuit of Fig 1. The difference between the circuits of Fig 3 and Fig 1 lies in the fact that the output amplifier of the latter is replaced by a functional converter. The functional transformation consists of three linear segments, whose limit points are determined by the cut-off voltages of the diodes, while the slope is determined by the ratio of the total resistance of the feedback circuit to the input resistance. Hysteresis loops obtained by this circuit are shown in Fig 4. Analysis of the characteristics obtained by this device shows that the loops can be analogued only approximately. A different circuit is therefore suggested. This is shown in Fig 5. The device is suitable for the analoguing of the so-called "preliminary hysteresis loop". The circuit of Fig 5 is characterised by the fact that the analogue amplifier is preceded not by one but by a series of condensers. Each of the condensers is connected to the input of the amplifier through a suitable diode limiter. The relationship between the output and the input signals of this type of analogue is expressed by

$$U_{BblX} = U_{BX}\frac{C_{BX}}{C_o} = U_{BX}\,\mathrm{tg}\,\alpha, \qquad \alpha = \mathrm{arc\ tg}\frac{C_{BX}}{C_o} \tag{1}$$

where C_{BX} is the capacitance at the input of the amplifier, C_o is the capacitance in the feedback circuit, and α is the slope of the transfer characteristic. The coefficients of the circuit of Fig 5 are indicated in Table 1. The loop taken by means of the analogue of Fig 5 is shown in Fig 6, while the partial-symmetrical and non-symmetrical cycles (taken by the circuit) are illustrated in Fig 7. Further circuits, similar to that of Fig 5, are illustrated in Figs 8 and 9; the circuit of Fig 8 consists of a limiter, a functional memory device, an integrator and a functional converter; the circuit of Fig 9 consists of a functional converter, a functional

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SOV/144-59-9-1/15

Electronic Analoguing of the Hysteresis Characteristics of Magnetic Materials

memory device and an integrating amplifier. The parameters of these circuits can be determined graphically by the method of successive approximations. The loops and partial-symmetrical and non-symmetrical cycles analogued by the circuit of Fig 9 are illustrated in Fig 10; the actual loops and partial cycles are shown in Fig 11.

There are 11 figures, 3 tables and 3 Soviet references, one of which is translated from English.

ASSOCIATION: Kafedra elektricheskikh apparatov, Khar'kovskiy politekhnicheskiy institut (Chair of Electrical Apparatus, Khar'kov Polytechnical Institute)

Card 4/4

SUBMITTED: May 15, 1959

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SHALYTKIN, N.L.; ZVEREV, V.A. (Gor'kiy)

Fastening with a metallic nail in rupture of the tubercle of the tibia. Ortop., travm. protez. 17 no.5:64 S-O '56. (MLRA 10:1)
(TIBIA--FRACTURE)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, M.A., zootekhnik; PIKOVSKIY, V.I., zootekhnik

Year-round raising of broiler chicks on the "Voskhod" Collective Farm. Zhivotnovodstvo 21 no.5:52-57 My '59. (MIRA 12:7)

1. Kolkhoz "Voskhod," Krasnopolyanskogo rayona, Moskovskoy oblasti (for Zverev).

(Poultry)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

AUTHOR: Zverev, V. A. 6-58-3-8/16

TITLE: A Calculation of the Deformation Profile of the Correction Surface in the Rectifying Glass of Aerophotographic Apparatus (Raschet profilya deformirovaniya korrektsionnoy poverkhnosti vyravnivayushchego stekla v aerofotoapparatakh)

PERIODICAL: Geodeziya i Kartografiya, 1958, Nr 3, pp. 40 - 43 (USSR)

ABSTRACT: In his paper (Geodeziya i Kartografiya, 1958, Nr 3, pp. 37 - 39) Professor M. M. Rusinov gave formulae for the calculation of the deformation of the first surface of the rectifying glass in aerophotographic apparatus for the purpose of compensating the residual distortion of the optical system. An example of the calculation according to this formula is given here. From the comparison of the profile abscissa of the deformed surface with the amount of distortion to be corrected is to be seen that the amount of deformation is higher than the amount of distortion. Therefore the technical tolerances in the treatment of the deformed surface of the recti-

·APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

6-58-3-8/16

A Calculation of the Deformation Profile of the Correction Surface in the Rectifying Glass of Aerophotographic Apparatus

fying glass need not be especially strict. There are 2 figures and 1 table.

AVAILABLE: Library of Congress

1. Photographic equipment--Characteristics

Card 2/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, Vitaliy Arkad'yevich, assistent

Actual ferromagnetic material in electronic models of magnetic elements. Izv. vys. ucheb. zav.; elektromekh. 5 no.5:563-565 '62. (MIRA 15:5)

1. Kafedra elektricheskikh apparatov Khar'kovskogo politekhnicheskogo instituta.

(Cores (Electricity))
(Ferrates—Electromechanical analogies)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

CHESNOKOV, N.D.; ZVEREV, V.A.; Prinimali uchastiye: BOGDANOVA, N.G.; BELIKOV, P.Ye.; FOMINSKIY, M.K.; BAZHENOV, M.M.

Making roll cast iron in an acid open-hearth furnace. Lit. proizv. no.2:4-7 F '63. (MIRA 16:3)

(Cast iron--Metallurgy)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.I.; BRODSKIY, L.N.

Industrial use of furniture panels with sawdust cores. Der.prom.5 no.8:18-19 Ag '56. (MLRA 9:10)

1.Khar'kovskiy mebel'nyy kombinat imeni Shchorsa.
(Furniture industry)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.I.

Device for determining the brand of steel. Mashinostroitel' no.4:
17 Ap '65. (MIRA 18:5)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.I.; BRODSKIY, L.N.

Finishing radio cabinets with grained paper. Der. prom. 6 no.9:21-22 S '57. (MIRA 10:11)

1. Khar'kovskiy mebel'nyy kombinat im. Shchorsa.
(Cabinetwork) (Graining) (Paper products)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V. I.

"Cases of Reconnecting Coils in Power Transformers," Elek. Stan., no. 2, 1949. Engr.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

STUDNIKOVA, N.I.; ZYKOV, S.I.; MILOVSKIY, A.V.; BURMIN, Iu.A.; ZVEREV, V.L.

Age of the metamorphic and metasomatic rocks of the Mugodzhar Hills. Vest.Mosk.un.Ser.4: Geol. 19 no.5:42-46 S-O '64.

(MIRA 17:12)

1. Kafedra geokhimii Moskovskogo universiteta.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, Vl. (g.Penza)

Workers of the evening and night shifts do not get due attention. Sov.profsoiuzy 7 no.15:42-44 Ag '59. (MIRA 12:12)

(Penza--Night work)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.M.

A good manual. ("Rug manufacture" by B.M. Fedosenko, A.G. Utkina. Reviewed by V.M. Zverev). Tekst. prom. 17 no.8:63 Ag '57. (MLRA 10:9)

1. Glavnyy inzhener Moskovskoy fabriki imeni Markova.
(Rugs) (Fedosenko, B.M.) (Utkina, A.G.)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SERKOVA, V.I.; ZVEREV, V.M.

Synthesis of asymmetric dimethyl-phenyl-n-metoxyphenylacetylenyl ethylene glycol. Trudy LTI no.59:19-21 '61.

(MIRA 17:9)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V. N.

ZVEREV, V. N. Ocherk poleznykh iskopaemykh Iakutskoi respubliki. (IN Vittenburg, P. V. ed. IAkutiia; sbornik statei. Leningrad, AN SSSR, 1927, p. 165-196)

DLC: DK771.Y2W2

CSt CSt-H CtY ICU MiU NN

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.P.

Chemical composition of atmospheric precipitation on the Caucasian coast of the Black Sea. Dokl. AN SSSR 142 no.5:1158-1161 F '62. (MIRA 15:2)

1. Predstavleno akademikom D.I.Shcherbakovym.

(Black Sea region--Precipitation(Meteorology))

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

REZANOV, I.A.; NGO TKHYONG SHAN; SHEYNMANN, Yu.M.; RATS, M.V.; KRUG, O.Yu.; ZYRYANOV, V.N.; RAKCHEYEV, A.D.; YAKOVLEVA, Ye.B.; PETROVA, M.A.; PETROV, Yu.I.; KUZNETSOV, Ye.A.; YUDINA, V.V.; BARDINA, N.Yu.; SIMANOVICH, I.M.; ATANSYAN, S.V.; SERGEYEVA, A.M.; PARFENOV, S.I.; RUTKOVSKI, Yatsek [Rutkowski, Jacek]; MAKHLINA, M.Kh.; ZVEREV, V.P.; TERNOVSKAYA, V.T.; SAMOYLOVA, R.B.; YERMAKOVA, K.A.; BYKOVA, N.K.; MEYYEN, S.V.; BARSKOV, I.S.; IL'INA, L.B.; BABANOVA, L.I.; DOLITSKAYA, I.V.; GORBACH, L.P.; BUTS'KO, S.S.; TRESKINSKIY, S.A.; SVOZDETSKIY, N.A.; PRYALVKHINA, A.F.; GROSVAL'D, M.G.; MODEL', Yu.M.; GORYAINOVA, I.N.; MEDVEDEVA, N.K.; MYALO, Ye.G.; DOBROVOL'SKIY, V.V.; KHOROSHILOV, P.I.; CHIKISHEV, A.G.

Brief news. Biul. MOIP. Otd. geol. 40 no.3:122-154 My-Je '65.
(MIRA 18:8)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.P.

Sulfate-calcium equilibrium in underground waters. Dokl. AN SSSR 164 no.2:403-405 S '65. (MIRA 18:9)

1. Proizvodstvennyy i nauchno-issledovatel'skiy institut po inzhenernym izyskaniyam v stroitel'stve. Submitted January 20, 1965.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.P.

Role of the chemical composition of the atmospheric precipitation in the formation of ground waters in the Medvenka Basin. Trudy Lab. gidrogeol.probl. 45:62-66 '62. (MIRA 15:6)

(Medvenka Valley—Water, Underground—Composition)
(Medvenka Valley—Precipitation (Meteorology))

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.P.

Conditions governing the formation of calcite crystals in bottom sediments of Lake Sevan. Trudy Lab.gidrogeol.probl. 45:85-89 '62. (MIRA 15:6)

(Sevan,Lake—Calcite crystals)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.S.

Faultless fabrics. Tekst. prom. 20 no. 11:86 N '60.
(MIRA 13:12)

(Moscow--Woolen and worsted manufacture--Labor productivity)

ZVEREV, V.S.
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

Production line for the finishing of woolen fabrics. Tekst.prom.21 no.1:94 Ja '61. (MIRA 14:3)

(Woolen and worsted manufacture)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.S.

New automatic looms. Tekst.prom. 21 no.2:91 Ja '61.
(MIRA 14:3)

(Looms)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

OL'KHOVSKIY, I.A.; ZVEREV, V.S.; KRINICHANSKAYA, L.A.; Prinimali uchastiye: BUNIM, L.L.; TAINKIN, A.S.; RUDNITSKIY, B.I.

Increasing the resistance of firebox hearths in steam boilers with liquid slag removal. Ogneupory 30 no.12:16-19 '65. (MIRA 18:12)

1. Krasnodarskiy filial Nauchno-issledovatel'skogo instituta po montazhnym i spetsial'nym stroitel'nym rabotam (for Ol'khovskiy, Zverev, Krinichanskaya).

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ABEL'SKAYA, N. B.; GRACHEVA, Ye. G.; YERSHOVA, Z. V.; ZVEREV, V. S.; MASLOVSKAYA, V. V.; RUDAYA, L. Ya.

Preparation of long-lived Bi^{210}. Radiokhimiia 4 no.3:377-378 '62. (MIRA 15:10)

(Bismuth--Isotopes)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.S.

Promote the manufacture of nonwoven materials by all means.
Tekst. prom. 20 no. 12:86 D '60. (MIRA 13:12)
(Nonwoven fabrics)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

S/186/62/004/003/022/022
E075/E436

AUTHORS: Abel'skaya, N.B., Gracheva, Ye.G., Yershova, Z.V., Zverev, V.S., Maslovskaya, V.V., Rudaya, L.Ya.

TITLE: Preparation of long-lived Bi^{210}

PERIODICAL: Radiokhimiya, v.4, no.3, 1962, 377-378

TEXT: To confirm the investigations with isomer Bi^{210}, reported by L.I.Rusinov, it was essential to obtain a sample of Bi containing a large quantity of the isomer and a minimum quantity of other radioactive admixtures. The metallic Bi subjected to irradiation was thoroughly purified from Po and the elements activated by neutrons Zn, Ag, Cd, Co, Sr, Sb, Se, Te. A sample of Bi enriched in Bi^{210} was obtained from the purified Bi.

SUBMITTED: May 29, 1961

Card 1/1

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.S.

Awards for efficiency promoters and inventors. Tekst. prom. 21 no. 4:90 Ap '61. (MIRA 14:7)

(Moscow Province—Textile industry—Technological innovations)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

PROCESSES AND PROPERTIES INDEX

Colorimetric determination of small quantities of silica in solutions, minerals and technical products. I. P. Alimarin and V. S. Zverev. *Trans. Inst. Econ. Mineral.* (U. S. S. R.) No. [illegible], 75 pp. (1933). A crit. survey of gravimetric and colorimetric methods for the detn. of small quantities of SiO_2. The method of Dienert and Wandenbulcke, based on the formation of $H_8[Si(Mo_2O_7)_6].xH_2O$, gives the best results. By this method amts. of SiO_2 from 5 to 0.005% can be detd. The presence of large amts. of mineral acids and their easily hydrolyzable salts interferes and it is then recommended to add NaOAc. The effects of P and Fe present in the soln. were counteracted by the addn. of excess H_3PO_4, which destroys the colored phosphomolybdate complex and forms a colorless acid phosphate of Fe. The phosphomolybdate color can also be removed by means of tartaric or citric acids. The effect of F^- is avoided by the addn. of $AlCl_3$, which forms H_3AlF_6 from H_2SiF_6. A complete bibliography for 1882 to 1932 inclusive is given. S. L. Madorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1

BC

a-1

Colorimetric determination of small quantities of silica in solutions, minerals, and technical products. I. P. Alimarin and V. S. Zverev (Trans. Inst. Econ. Min. U.S.S.R., 1934, No. 63, 15 pp.).—A crit. survey. Dienert and Wandenbulcke's method, based on the formation of $H_8[Si(Mo_2O_7)_6]$, is best for 0·005—5% SiO_2. In presence of large amounts of mineral acids and their hydrolysable salts, NaOAc should be added. The effects of P and Fe are counteracted by adding excess of H_3PO_4. The phosphomolybdate colour can also be removed with tartaric or citric acid. The effect of F' is avoided by adding $AlCl_3$, which forms H_3AlF_6 from H_2SiF_6.

Ch. Abs. (e)

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

MACHERET, L.I., inzh.; ZVEREV, V.V., inzh.

Choice of the angle of the superimposition and the width of paper tape in insulating high-voltage cables. Vest. elektroprom. 31 no.8:45-47 Ag '60. (MIRA 15:5)
(Electric cables)
(Electric insulators and insulation)

MACHERET, L.I., inzh.; ZVEREV, V.V., inzh.

Insulation machines for the manufacture of high-voltage cables.
Vest. elektroprom. 31 no.11:53-56 N '60. (MIRA 13:12)
(Electric cables)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

DNESTROVSKIY, Nikolay Zel'manovich; POMERANTSEV, Sergey Nikolayevich [deceased]; ZVEREV, V.V. [deceased]; SHPICHINETSKIY, Ye.S., kand. tekhn. nauk, retsenzent; POSTNIKOV, N.N., inzh., retsenzent; RZHEZNIKOV, V.S., red.; KOSOLAPOVA, E.F., red. izd-va; BERLOV, A.P., tekhn. red.

[Brief manual on the treatment of nonferrous metals and alloys] Kratkii spravochnik po obrabotke tsvetnykh metallov i splavov. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 410 p. (MIRA 14:8)

(Nonferrous metals) (Metalwork)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

500

1. MAGIDSON, O. Yu., FEDOTOVA, M.V., ZVEREV, V.V.,

2. USSR (600)

"Quinoline Compounds as a Source of Medical Preparation--VIII. Anesthetics of the Series of Amides of Chinchonic Acid," Zhur. Obsch. Khim., 9, No 22, 1939. Synthetic and Pharmacological Dept., All-Union Sci-Res Inst imeni S. Ordzhonikidze, Moscow. Received 17 June 1939.

9. [redacted] Report U-1626, 11Jan 1952.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1

PROCESSES AND PROPERTIES INDEX

60

17

The method of biological evaluation of Indian hemp according to Straub and Gayer. V. V. Zverev. *Byull. Nauch. Issledovatel. Khim.-Farm. Inst.* 1931, 100-10.—The biol. evaluation of Indian hemp in the form an alc. and acetone soln. was found to be in accordance with the method introduced by Straub and Gayer. The exptl. procedure is described.

A. A. Boehtlingk

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1

PROCESSES AND PROPERTIES INDEX

CA

11H

Testing of bile stimulants. V. V. Zverev. *Klim. Farm. Prom.* 1935, No. 2, 126-8(1935).—Rabbits tested by Stransky's method showed that high bile stimulation is produced by hexamethylenetetramine and decholin.

L. Nasurevich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ACC NR: AP7002601 SOURCE CODE: UR/0144/66/000/009/1032/1037

AUTHOR: Shukshunov, V. Ye.; Zverev, V. V.

ORG: none

TITLE: Automatic compensation for dynamic error of temperature transducers with high thermal inertia

SOURCE: IVUZ. Elektromekhanika, no. 9, 1966, 1032-1037

TOPIC TAGS: temperature transducer, circuit design

ABSTRACT: The scientific research laboratory of automation of production processes at the Novocherkassk Polytechnical Institute has developed and tested a circuit designed for correction of dynamic error in thermoreceptors with time constants from 800 seconds to 1/10 second. The principle of the electric correction is series connection of the temperature transducer and a connecting link whose transfer function is the inverse of the transfer function of the transducer. Since the transfer functions of industrial thermoreceptors can be approximated by an inertial link of first, second or higher orders, the correcting link must be a first, second or higher order differentiating link. The device developed is based on an operational amplifier with automatic zero stabilization and flexible feedback. Orig. art. has: 3 figures and 14 formulas. [JPRS: 39,183]

SUB CODE: 09 / SUBM DATE: 30Dec64 / ORIG REF: 003

Card 1/1 UDC: 62-52+681.2.083.8

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

BELUGIN, D.A., kandidat voyennykh nauk, polkovnik; ZVERYEV, V.Ya., polkovnik; DANILIN, V.N., inzhener-polkovnik; VOROB'YEV, P.A. polkovnik, redaktor; KONOVALOVA, Ye.K., tekhnicheskiy redaktor.

[Artillery reconnaissance by instruments; a textbook for artillery schools] Artilleriiskaia instrumental'naia razvedka; uchebnik dlia artilleriiskikh uchilishch. Moskva, Voen.izd-vo M-va obor.SSSR, 1956. 483 p. (MIRA 10:6)

(Military reconnaissance)
(Artillery, Field and mountain)

SOV/110-58-11-16/28

AUTHORS: Zverev, V.V. (Engineer), and Utrobin, B.V. (Engineer).

TITLE: Theory and Practice of Packing Copper and Aluminium Cores of Power Cables (Teoriya i praktika uplotneniya mednykh i alyuminiyevykh zhil silovykh kabeley).

PERIODICAL: Vestnik Elektropromyshlennosti, Nr.11, 1958, pp.56-60, (USSR).

ABSTRACT: Heavy-section power cables are stranded for flexibility; then the conductors are packed by compression in special rollers to increase the filling factor and reduce the external diameter. The benefits that result from this process are enumerated. A simplified account is given of the processes that occur during the packing of the conductors. The process is considered one layer at a time and it is assumed that the first layer is packed before the second lay is applied. In the usual construction, where the conductors are not packed in this way, all the strands are of the same diameter, but with the packed construction each radial layer should contain wires smaller in diameter than those beneath it so that

Card 1/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

Theory and Practice of Packing Copper and Aluminium Cores of Power Cables.

the wires lie correctly on the underlying packed layers. Equations are given by means of which wire diameters for successive layers may be calculated. Expressions are also given for the external diameters of conductors. The equipment required for packing conductors in the factory is described. The rolls used to pack the conductors are of special profile and a description of these is given. Types of profile used are sketched in Figs.2, 3 & 4. There are 5 figures, 1 table.

SUBMITTED: April 24, 1957.

1. Electric cables--Cores 2. Electric cables--Construction

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SOV/110-58-11-22/28

AUTHORS: Pashchenko, V.Ye. (Engineer) and Zverev, V.V. (Engineer)

TITLE: Discussion of Engineer I.V. Kuranov's Article (Po povodu stat'i Inzh. I.V. Kuranova).

PERIODICAL: Vestnik Elektropromyshlennosti, Nr.11, 1958, p.71, (USSR)

ABSTRACT: This is a discussion of the previous article on "Increasing the output of cable-making machinery". These authors claim that although Kuranov's ideas are all right in principle, his approach is over-simplified. For example, cable-making machines with armouring heads usually have additional heads for applying paper, and these cannot necessarily be speeded-up in the same way. In particular, it is difficult to maintain constant tension of the paper at variable machine speeds. Kuranov's suggestion may be applicable to simple machines with no paper-winding heads, provided that it is possible to change all the reels at once, but even then the increase in output will not be so great as he claims. Each

Card 1/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SOV/110-58-11-22/28

Discussion of Engineer I.V. Kuranov's Article.

particular case must be examined on its merits.

1. Electric cables--Production 2. Machines--Performance

Card 2/2

ZVEREV, V. A.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

Wireless Engineer
June 1954
Acoustics and Audio Frequencies

(1)

" Modulation Method of Measurement of Ultrasonic Dispersion.—V. A. Zverev. (C. R. Acad. Sci. U.R.S.S., 1st Aug. 1953, Vol. 91, No. 4, pp. 791–794. In Russian.) The method was used in the experimental determination of dispersion in a long Ni wire, using a 1-Mc/s ultrasonic wave modulated at 100 kc/s. Fractional differences of velocity down to $\sim 2 \cdot 4 \times 10^{-5}$ were readily observed.

19/8/54

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

GUDOVICH, G.A., inzhener; ZVEREV, V.A., inzhener; OSIPOV, A.M., inzhener.

Automatic reclosing diagrams for switches of remote controlled units. Elek.sta. 25 no.2:51-52 F '54. (MIRA 7:2)
(Electric switchgear)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

3

4921. A CAPACITATIVE ANALYSER OF A SOUND FIELD 534.231

V.A.Zverev, V.M.Bokor and N.E.Lur'e.

Akust. Zh., Vol. 1, No. 3, 218-20 (1955). In Russian.

An experiment is described in which the sound field in a liquid is investigated by means of the variation of the permit- tivity with pressure in the medium. In water a change of per- mittivity at 5 Mc/s of the order of 10^{-8} is obtained for a sound frequency 85 kc/s and pressure change of 10^{6} bars.

C.R.S.Manders

Gor'kiy Res. Phys-Tech. Inst., Gor'kiy State U.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1

0

534.213

4906. THE PROBLEM OF INTERACTION OF SOUND WAVES. A.G.Gorelik and V.A.Zverev. Akust. Zh., Vol. 1, No. 4, 339-42 (1955). In Russian.

A method similar to that of L.I.Bershtein can be employed for detecting and studying acoustic wave interaction in fluids. The very small modulation caused by this interaction can be detected but its amplitude and phase can also be determined.

C.R.S.Manders

2

ZVEREV, V. A.
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

Gorki Physical Research Institute, Gorki State University, Gorki

"Modulation Method for Measurements of Ultrasonic Dispersion" paper presented at 2nd International Congress on Acoustics, Cambridge, Mass., 17-23 June 1956.

So: B-100200

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.A.

Feasibility of absolure calibration of sound emitters and receivers using radiation pressure as a basis and not using a radiometer. Akust.zhur.2 no.4:378-379 O-D '56. (MLRA 10:1)

1. Gor'kovskiy issledovatel'skiy fiziko-tekhnicheskiy instutut pri Gor'kovskom gosudarstvennom instutute.

(Sound--Measurement)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.A.

46-4-3/17

AUTHOR: Zverev, V.A.

TITLE: The Effect of Directivity of a Receiving System on the Mean Intensity of a Signal Received as a Result of Scattering. (Vliyaniye napravlennosti priyemnogo ustroystva na srednyuyu intensivnost' signala, prinimayemogo za schet rasseyaniya)

PERIODICAL: Akusticheskiy Zhurnal, 1957, Vol.III, Nr 4, pp.329-336 (USSR)

ABSTRACT: There are two ways of discussing the propagation of waves in a medium with small random non-uniformities in the refractive index. Obukhov (Ref.5), Chernov (Ref.4), and a number of other workers have solved the problem of amplitude and phase fluctuations of a wave at some point on the wave front as functions of the distance L traversed by the wave in a non-uniform medium. In papers concerned with scattering of waves (Refs.1, 2 and 3) the mean intensity of scattered radiation at some angle θ to the direction of the wave vector of the undisturbed wave is computed. Which of these two methods is adopted depends on the directivity of the receiving and transmitting antennae.

Card 1/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

46-4-3/17

The Effect of Directivity of a Receiving System on the Mean Intensity of a Signal Received as a Result of Scattering.

In fact, in the case of non-directional antennae, the dimen-
sions of which are much less than the wavelength, the first
method is used. The second method is used in the case of
very directional antennae. However, it is shown in the
present paper that these criteria are insufficient. In
addition, one must know the "directivity of the radiation
from the non-uniformities" (this concept is defined in the
present paper). Expressions are derived for the dependence
of the mean intensity of the received scattered intensity
on the directivity of the receiving system. It is assumed
that the scattering takes place on non-uniformities in the
speed of propagation of the waves and that the scattering
volume is in the Frauenhofer region relative to the receiv-
ing system. It is shown that in order to obtain the
scattered intensity it is sufficient to know the correlat-
ion function in directions perpendicular to the distances
which do exceed the dimensions of the receiver. There are
2 Russian and 3 English references.

Card 2/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

46-4-3/17

The Effect of Directivity of a Receiving System on the Mean Intensity of a Signal Received as a Result of Scattering.

ASSOCIATION: Scientific Research Radiophysical Institute of the Gorki State University (N.-i. radiofizicheskiy institut pri Gor'kovskom gosudarstvennom universitete)

SUBMITTED: January 22, 1957.

AVAILABLE: Library of Congress.

Card 3/3 1. Antennas 2. Microwave scattering 3. Scattering-Intensity-Theory

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V. A.

"Propagation of a Modulated Wave in a Randomly Inhomogenous Medium."

with KALACHEV, A. L., "Frequency Modulation Applied to Acoustic Measurements"

papers presented at the 4th All-Union Conf. on Acoustics, Moscow, 26 May - 4 Jun 58.

DENISOV, N. G., ZVEREV, V. A. (Gor'kiy)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

"The Wave Propagation in Mediums With Random Heterogeneities".

report presented at the All-Union Conference on Statistical Radio Physics, Gor'kiy, 13-18 October 1958. (Izv. vyssh uchev zaved-Radiotekh., vol. 2, No. 1, pp 121-127) COMPLETE card under SIFOROV, V. I.)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SOV/46-4-4-4/20

AUTHORS: Zverev, V.A. and Kalachev, A.I.

TITLE: Measurement of the Interaction of Sound Waves in Liquids (Izmereniye vzaimodestviya zvukovykh voln v zhidkostyakh)

PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol 4, Nr 4, pp 321-324 (USSR)

ABSTRACT: Zverev and Gorelik (Ref 1) showed experimentally that if a high-frequency wave field interacts at right-angles with a low-frequency field, then the high-frequency wave is phase modulated. The present paper describes an approximate calculation and quantitative measurements of such an interaction. This interaction is due to non-linearity of the medium which appears as non-linearity of the hydrodynamic equations and the equation of state. The equation-of-state non-linearity predominates and calculations are based on the assumption that the hydrodynamic non-linearity can be neglected. The phase modulation of the high-frequency wave is due to a periodic change of its velocity in the field of the stronger low-frequency wave. The waves studied by the authors had frequencies of 1.3×10^6c/s and 3×10^3c/s respectively. The experimental technique employed followed Ref 1. The apparatus used is shown schematically in Fig 1. It consists of a high-frequency generator 1, a phase-shifter 2, a high-frequency amplifier 3, a balancing

Card 1/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

amplifier 4, a detector 5, a low-frequency amplifier and filter 6, a ZG-10 low-frequency generator 7, a VKS-7 valve voltmeter 8, a LV-9 valve voltmeter 9, a Plexiglas bath 10, a quartz vibrator (producing 1.3×10^6c/s) 11, a quartz receiver 12, bellows 13 and an electrodynamic vibrator (producing 3×10^3c/s) 14. Measurements were made in tap (mains) water, in 93.5% ethyl alcohol, and in 21.6% NaCl solution. Fig 3 gives the vertical distribution of pressure above the centre of the high-frequency vibrator. The ordinate give the values of the logarithm of the voltage produced by a $BaTiO_3$ probe used to measure pressure, while the abscissa gives the distance from the vibrator. Distribution of pressure (in bars) along a horizontal line away from the high-frequency vibrator is given in Fig 4. In both Figs 3 and 4 curves 1, 2 and 3 denote tap water, NaCl solution and ethyl alcohol respectively. The pressure distributions given in Figs 3 and 4 show that the high-frequency waves are not planar. This fact was allowed for in calculations of the rate of change of the sound velocity c with pressure p (dc/dp). The value of dc/dp was obtained from the measured phase modulation of the high-frequency wave. The results obtained are given in a table on p 324. The sixth column gives the values of dc/dp

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

obtained by the present authors; the seventh column gives dc/dp calculated from static measurements described in Refs 2, 3. From the results obtained the values of the constant b which occurs in the equation of state $P = a\rho + b\rho^2$ (P and ρ are departures of pressure and density from their equilibrium values, $a = c_0^2$ = the square of sound velocity at infinitely small densities and b = a constant for a given medium) were obtained for the three liquids investigated. The values of b and b/a are given in the third and fourth columns of the table. The values of the ratio B/A which occurs in the equation of state $P = A\rho/\rho_0 + (B/2)(\rho/\rho_0)^2$ were also obtained and are given in the fifth column of the table. The latter equation of state comes from Ref 4. The authors' estimate the accuracy of their values of dc/dp to be 17%. There are 4 figures, 1 table and 5 references, 3 of which are American and 2 Soviet.

ASSOCIATION: Gor'kovskiy gosudarstvennyy universitet (Gor'kiy State University)

SUBMITTED: September 18, 1957

Card 3/3

Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

69946

SOV/141-2-4-1/19

8

9.9000

AUTHORS: Denisov, N.G. and Zverev, V.A.

TITLE: Some Problems in the Theory of Wave Propagation in Media With Random Irregularities (A Review)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 4, pp 521 - 542 (USSR)

ABSTRACT: The present review discusses methods of solution of phenomenological problems in the theory of wave propagation in media with random irregularities, i.e. the methods of calculation of the statistical properties of the field of a wave which has passed through a nonhomogeneous layer. Among these statistical properties are the amplitude and phase fluctuations and the corresponding correlation functions. The discussion also includes the diffraction at irregular screens and certain problems in scattering theory. The review covers mainly those topics which have not been considered in existing reviews and monographs, e.g. those by Chernov and Ratcliffe (Refs 1, 3). Moreover, in distinction to the existing reviews and monographs, the present paper includes a discussion

4

Card1/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

69946

Some Problems in the Theory of Wave Propagation in Media With Random Irregularities (A Review)

SOV/141-2-4-1/19

of the regular refraction of waves in a non-uniform layer. The paper is divided into four sections, namely: 1) geometrical optics approximation;
2) the method of continuous perturbations;
3) diffraction of waves by an irregular screen and
4) the scattering of waves by small irregularities.
There are 31 references, of which 19 are Soviet, 4 German and 8 English.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute of Gor'kiy University)

SUBMITTED: June 15, 1959

Card 2/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

69077

S/120/60/000/01/012/051
E192/E382

9.6000

AUTHORS: Zverev, V.A. and Orlov, Ye.F.

TITLE: Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, Nr 1, pp 50 - 57 (USSR)

ABSTRACT: The instrument is illus... ed schematically in Figure 1. S is a light source which illuminates two parallel films Π_1 and Π_2. The processes to be investigated $g(x_1)$ and $f(x)$ are recorded on the films along the "window" having a length D_{makc} = 300 mm. The transparency $f(x)$ of the film Π_2 as a function of x corresponds to a time-dependent process $f(t).x = vt$, where v is the velocity of motion of the film during the recording of the signal. The light transmitted through the superimposed films Π_1 and Π_2 falls on a set of photo cells. The current of the photo

Card 1/5

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

69077
S/120/60/000/01/012/051
E192/E382

cells is proportional to the light flux impinging on it and can be expressed by:

$$i = B \int_{-D/2}^{+D/2} f(x)g(x_1)dx \qquad (3)$$

If the film Π_1, having a transparency $g(x_1)$ is moved with respect to Π_2 by a quantity ξ, the current is:

$$i_\xi = B \int_{-D/2}^{+D/2} f(x)g(x - \xi)\, dx \qquad (4)$$

The quantity measured by the meter 1 (Figure 1) and recorded by a registering device 2 is proportional to the correlation function of the process f(t) and g(t) at the point ξ. By changing ξ, which can be done by

4

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

69077
S/120/60/000/01/012/051
E192/E382

Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

moving one of the films with respect to the other, it is possible to determine the type of the correlation function. In order to determine the spectrum of $f(x)$ it is necessary to express $g(x)$ in the form:

$$g(x) = \cos k_n (x - \xi) \tag{5}$$

with different k_n. If $k_n = 2\pi n/D$, then:

$$i_\xi = BDC_n \cos (k_n \xi - \varphi_n) \tag{6}$$

which shows that the amplitude of the output signal is proportional to the spectral amplitude of the signal $f(x)$. The instrument constructed on the above principle had the frequency range from 1/300 to 3 c/s. The averaging time could be as high as 300 sec. Some of the experimental results obtained by means of the instrument

Card3/5

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

69078

S/120/60/000/01/012/051
E192/E382

Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

are shown in Figures 2-11. Figure 3 shows a comparison of the correlation function measured by the instrument (solid line) with the calculated results which are indicated by the crosses. Figures 4 show the response of the system to a sinusoidal signal for various window lengths. Figure 5 gives the cross correlation function for a pulse train having a mark-to-space ratio of 1:2 and a sinusoidal signal. Figures 6-8 show the oscillograms of certain processes and their correlation and spectrum functions over a certain frequency bandwidth. Figure 9 shows the acceleration processes in a seat of the car, type M-21 "Volga", produced at the Gor'kiy Car Factory and the correlation function of the acceleration curve. Figures 10-11 give the recordings of human heart signals and their autocorrelation functions. There are 11 figures and 4 references, 3 of which are English and 1 Soviet.

Card4/5

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

69077

S/120/60/000/01/012/051
E192/E382

Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

ASSOCIATIONS: Nauchno-issledovatel'skiy radiofizicheskiy institut (Scientific-research Radiophysics Institute) of Gor'kovskiy gosudarstvennyy universitet (Gor'kiy State University)

SUBMITTED: December 26, 1958

Card 5/5

85992

6.9200

S/141/60/003/004/018/019
E032/E314

AUTHOR: Zverev, V.A.

TITLE: Dispersion Properties of Media Containing Random Irregularities

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol. 3, No. 4, pp. 723 - 724

TEXT: In a previous paper (Ref. 1) the present author showed that during the propagation of a modulated wave in a medium containing random irregularities, the change in the character of the modulation is similar to that in the case of a dispersive medium. This change is determined by the value of the phase invariant:

$$\Theta = \varphi_o - (\varphi_1 + \varphi_2)/2 \qquad (1)$$

(Ref. 2), where φ_o is the phase of the carrier and $\varphi_{1,2}$ are the phases of the side components. The calculation given in Ref. 1 was concerned only with small values of Θ^2. It follows from Eq. (1) that the correlation

Card 1/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

85992

S/141/60/003/004/018/019
E032/E314

Dispersion Properties of Media Containing Random Irregularities

function for the phase invariant can be written in the form of Eq. (2), where $\varphi_i(\rho)\varphi_j(\rho')$ are the correlation functions for phase changes on frequencies ω_i and ω_j. In accordance with Eq. (2), the spectrum of $\Theta_\rho \Theta_{\rho'}$ is the sum of the spectra of the correlation functions $\varphi_i(\rho)\varphi_j(\rho')$.

Using the method put forward by Tatarskiy in Ref. 3, a general expression is derived for the correlation function for the phase invariant (Eq. (7)). The derivation is based on Eq. (3), which was detailed by Tatarskiy in Ref. 3.
There are 3 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitet (Scientific Research Radiophysics Institute of Gor'kiy University)

SUBMITTED: April 26, 1960

Card 2/2

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

86866

S/141/60/003/005/021/026
E032/E314

9,9300

AUTHOR: Zverev, V.A.

TITLE: Scattering of Modulated Waves by Random Irregularities

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol. 3, No. 5, pp. 903 - 904

TEXT: The study of the propagation of a modulated wave can be used to obtain information about the degree of correlation for fluctuations at different frequencies. The degree of correlation can be determined by measuring the mean square of the "phase invariant" (Ref. 1)

$$\Theta = \varphi_o - (\varphi_1 + \varphi_2)/2 \qquad (1)$$

where φ_o is the phase of the carrier and $\varphi_{1,2}$ is the phase of the side components. In the case of complete correlation of fluctuations in phase, fluctuations in the phase invariant vanish, while in the complete absence of

Card 1/6

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

86866

S/141/60/003/005/021/026
E032/E314

Scattering of Modulated Waves by Random Irregularities

correlation

$$\overline{\Theta^2} = (3/2)\overline{\varphi^2} \qquad (2).$$

In a number of cases $\overline{\varphi^2}$ can be estimated from the mean square value of fluctuations in the level of the received signal. In the case of scattering by weak irregularities, correlation functions for the scattered field, phase and amplitude, at a large distance from the scattering centres, are practically identical. A sufficient condition for the identity of the correlation functions for the field and phase is a low value of the modulus of the mean square fluctuation of the complex phase. The present author determines the correlation of scattered fields at different frequencies and assumes that the angle ϑ at which the scattering is observed is independent of frequency and that dispersion is absent. Assuming that the scattering occurs on weak

Card 2/6

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

86866

S/141/60/003/005/021/026
E032/E314

irregularities, the scattered field at a large distance from the scattering centre is written down in the form

$$E = \frac{E_o k_o^2 \sin \varkappa}{4\pi R} \varepsilon_k \qquad (3)$$

where E_o is the amplitude of the incident wave,
k_o is the wave vector of the incident wave,
$\varkappa$ is an angle representing the polarisation,
R is the distance from the scattering volume and
ε_k is given by

$$\varepsilon_k = \int_V \Delta\varepsilon\ (x, y, z) e^{iKr} \qquad (4).$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

S/141/60/003/005/021/026
E032/E314

Scattering of Modulated Waves by Random Irregularities

In this expression, $\Delta\varepsilon$ is the fluctuation in the refractive index, $\underline{K} = \underline{k}_o - \underline{k}$, where $\underline{k}$ is the wave vector of the scattered field and

$$|K| = 2k_o \sin(\vartheta/2) \qquad (5).$$

The required correlation is defined by

$$\overline{E(k_1)E(k_2)} = \frac{E_o^2 k_1^2 k_2^2 \sin \varkappa}{(4\pi R)^2} \overline{\varepsilon_{k_1} \varepsilon^*_{k_2}} \qquad (6).$$

It then remains to compute the quantity $\overline{\varepsilon_{k_1} \varepsilon^*_{k_2}}$. It is shown that for a spherical scattering centre having radius R the latter quantity is given by

Card 4/6

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

86866

S/141/60/003/005/021/026
E032/E314

Scattering of Modulated Waves by Random Irregul...ties

$$\overline{\varepsilon_{k_1}\varepsilon^*_{k_2}} = \overline{\left(\varepsilon_k\right)^2}\ \frac{2}{(\Delta kR)^2}\left[\frac{\sin(\Delta kR)}{\Delta kR} - \cos(\Delta kR)\right] \qquad (12)$$

where $\Delta k = 2c^{-1}(\omega_1 - \omega_2)\sin(\vartheta/2)$. For modulated vibrations $\omega_1 - \omega_2 = \Omega$, where Ω is the modulation frequency. For given ϑ, ΔkR is proportional to the ratio of the diameter of the centre to the wavelength on the modulation frequency. When the wavelength on the modulation frequency is greater than $2R$, the scattered carrier and side frequencies will be correlated and fluctuations in θ will be very small. If on the other hand the wavelength on the modulation frequency is considerably lower than $2R$ then fluctuations in θ will reach a maximum. Thus, a study of the scattering of modulated waves may be used to provide

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

86866

S/141/60/003/005/021/026
E032/E314

Scattering of Modulated Waves by Random Irregularities

information on the order of magnitude of the scattering centre and its form.
There is 1 Soviet reference.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute of Gor'kiy University)

SUBMITTED: May 5, 1960

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.A., KALACHEV, A.I.

Application of frequency modulation to acoustic measurements.
Akust. zhur. 6 no.2:205-212 '60. (MIRA 13:8)

1. Nauchno - issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom gosudarstvennom universitete.
(Sound waves)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

VASIL'YEV, V.G.; ZVEREV, V.A.

Electric model of a rectifying bridge circuit. Izv. vys. ucheb. zav.; elektromekh. 4 no. 1:75-82 '61. (MIRA 14:4)
(Bridge circuits--Models)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

S/141/61/004/002/008/017
E192/E382

9,9000

AUTHORS: Zverev, V.A. and Orlov, Ye.F.

TITLE: Information transmission Rate in a Channel With Multipath Propagation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, Vol. 4, No. 2, pp. 282 - 292

TEXT: The problem of channel capacity of multipath communications channels with constant or variable parameters has been considered by various authors - R.L. Dobrushin (Ref. 4 - Teoriya veroyatnostey i eye primeneniye, 3, 395, 1958), B.S. Tsybakov (Radiotekhnika i elektronika, 1958, 4, 1427 - Ref. 5) and J. Feinstein (J. Appl. Phys., 26, 219, 1955 - Ref. 6). The problem is investigated further in this paper. It is assumed that the investigated channel is in the form shown in Fig. 1. The signal x(t) propagates through a multipath medium by various routes and at the receiver it is in the form :

Card 1/~~15~~ 12

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

$$y(t) = \sum_{r=1}^{n} a_r x(t - \tau_r) \qquad (1)$$

where a_r and τ_r are the damping coefficient and the propagation time for the small r-th path, respectively. The frequency characteristic of the multipath channel is written as:

$$k(f) = \sum_{r=i}^{n} a_r e^{i2\pi f \tau_r} \qquad (2)$$

The output signal contains correlation couplings of the type:

$$B_y(\tau) = \sum_{r=1}^{n} \sum_{s=1}^{n} a_r a_s B_x(\tau + \tau_r - \tau_s) \qquad (3)$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

where B_y and B_x are the autocorrelation functions of the signals $y(t)$ and $x(t)$. The signal at the receiver, together with the noise $z(t)$, appears at the output of the communications channel, where the total signal can therefore be expressed as:

$$v(t) = \sum_{r=1}^{n} a_r x(t - \tau_r) + z(t) \qquad (4).$$

The information-transmission rate C, when the signal at the input of the channel has normal distribution, can be expressed by (Ref. 1 - K. Shannon - The Theory of Electrical Signal Transmission in the Presence of Noise, IL, Moscow, 1953) (Ref. 7 - P. Elias - Proc. IRE, 39, 839, 1951):

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

$$C = \lim_{T \to \infty} \left[\frac{1}{T} \log M^{1/2} \right] \qquad (7)$$

where M is the correlation matrix of the output signal:

$$|M| = \begin{vmatrix} \overline{v_1 v_2} \ldots \overline{v_1 v_N} \\ \cdot \ \cdot \ \cdot \ \cdot \ \cdot \\ \overline{v_N v_1} \ldots \overline{v_N v_N} \end{vmatrix}$$

where v_j are the values of the output signal at the sampling time intervals. On the basis of Eq. (7) it is possible to express the channel-information capacity in terms of the spectral functions of the signal (Ref. 2 - Cybernetics. izd. Sov. radio, M., 1958 - N.Wiener; Ref. 8 - Dokl. Ak.nauk SSSR, 99, 213, 1954 - M.S. Pinsker):

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

$$C = \frac{1}{T}\log\prod_{j}^{N}\left(1+\frac{|y(f_j)|^2}{|z(f_j)|^2}\right) = \frac{1}{T}\sum_{j=1}^{n}\log\left(1+\frac{|y(f_j)|^2}{|z(f_j)|^2}\right), \tag{8}$$

where $|y(f_j)|^2$ and $|z(f_j)|^2$ are spectral densities of the signals $y(t)$ and $z(t)$. If the signal and noise spectra (σ_x^2 and σ_z^2) are independent of frequency, Eqs. (7) and (8) can be written as:

$$C = F\log\left(1+\frac{\sigma_y^2}{\sigma_z^2}\right) + \lim_{T\to\infty}\left[\frac{1}{T}\log|R|^{1/2}\right]; \tag{7a}$$

$$C = \int_0^F \log\left(1+\frac{\sigma_y^2}{\sigma_z^2}\,\frac{|k(f)|^2}{\frac{1}{F}\int_0^F |k(f)|^2\,df}\right)df. \tag{8a}$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

where R is the matrix of the correlation coefficients of the signal at the output of the channel (corresponding to the matrix M). In the case of a two-path propagation, it can be assumed that the signals received have amplitudes a_1 and a_2 and that the relative delay time is τ, The frequency characteristic of this channel is:

$$|k(f)|^2 = a_1^2 + a_2^2 + 2a_1a_2\cos(2\pi f\tau) \tag{13}$$

so that the channel capacity is given by:

$$C = \int_0^F \log\left[1 + \alpha(a_1^2 + a_2^2) + 2\alpha\, a_1a_2\cos(2\pi f\tau)\right]df \tag{14}$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

where $\alpha = \sigma_x^2/\sigma_z^2$. The effect of two-path propagation is illustrated in Fig. 2, where F is the bandwidth of the transmission channel. The channel capacity of a system with n-path propagation, having a maximum delay time T_p and spectral distribution for the amplitude of the received signal K(f), is also investigated and it is shown that in this case the capacity is expressed by:

$$C = - \frac{F e^{\sigma_z^2/\sigma_y^2}}{\ln 2} \mathrm{Ei}\left(- \frac{\sigma_z^2}{\sigma_y^2} \right) \qquad (19)$$

where Ei(x) is the integral exponential function which can be represented in the form of the following series:

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

$$Ei(x) = c + \ln(-x) + \frac{x}{1.1!} + \frac{x^2}{2.2!} + \dots + \frac{x^n}{n.n!} + \dots \qquad (20)$$

$$(x < 0)$$

where $c = 0.57$. On the other hand, for an n-path propagation channel the rate of information-transmission is a minimum if the energies transmitted to the receiver by various paths are equal and the signal delays along the various paths are the same. The frequency characteristic of such a channel is given by:

$$|k(f)|^2 = |\sin(\pi n f \tau)/\sin(\pi f \tau)|^2 \qquad (23)$$

where τ is the delay time and its capacity is expressed by:

$$C = F \log(a^2/\sigma_z^2) + \int_0^F \log|\sin(\pi n \tau f)/\sin(\pi \tau f)|\, df \qquad (24).$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

In general, the signal at the output of a multipath propagation channel, which is defined by Eq. (4), has fluctuation amplitudes a_r and delay times τ_r. Due to the presence of a large number of interfering paths or rays, it can be assumed that the changes of the transfer function for the channel at various frequencies are independent. The frequency interval ν_o for the correlation of these changes is dependent on the reverberation time T_p; this is defined by:

$$\nu_o = 1/T_p \qquad (26)$$

The qualitative estimate of a multipath communications channel with variable parameters can be estimated on the basis of the work of Feinstein (Ref. 6), who gave a formula for the capacity of a channel whose output signal was in the form:

$$v(t) = K(t)y(t) + z(t) \qquad (27)$$

where K(t) is a random modulation function having the normal probability distribution. The formula for the information-transmission rate is in the form:

$$C = \Delta f \log \left\{ 1 + \frac{\sigma_y^2}{\sigma_z^2 + \overline{K^2}\sigma_y^2/\left[1 + \overline{K^2}(q-1)\sigma_y^2/\sigma_z^2\right]} \right\}. \qquad (28)$$

where Δf is the bandwidth of the signal frequencies,

$\overline{K^2}$ is the mean square value of the fluctuations of K(t),

q is the number of sampling points for the signal at which the values of K(t) are correlated.

It can easily be shown that:

$$q = \Delta f T_{\text{фл}} \qquad (29)$$

where $T_{\text{фл}}$ is the autocorrelation interval for the modulating function K(t) .

Card 10/13 12

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

A multipath channel with variable parameters can be split into a number of sub-channels, whose bandwidths are less than the frequency interval o. The capacity can be expressed by:

$$C = \int_0^F \log\left\{1 + \frac{\sigma_v^2 K_f^2}{\sigma_z^2 + \bar{K}^2 \sigma_v^2 K_f^2 / \left[1 + \bar{K}^2 (q - 1) \sigma_v^2 K_f^2 / \sigma_z^2\right]}\right\} df. \qquad (30)$$

provided the interaction between the neighbouring sub-channels is disregarded. On the basis of the above formulae, it is concluded that in a channel with constant parameters, the presence of many propagation paths does not reduce the capacity of the channel; in most cases, the channel capacity is equal to the capacity of a single-path channel whose energy is equal to the total energy of all the "paths" transmitted to the receiver. On the other hand, the occurrence of the equidistance distribution of delay times is very improbable in normal conditions. In the case of a channel with variable parameters, the fluctuations of the parameters have a significant effect

S/141/61/004/002/008/017
Information-transmission Rate ... E192/E382

on the channel capacity: the capacity is dependent on the width of the spectrum and the magnitude of the changes of the transfer function of the channel. The capacity of a multipath communications channel can be determined if the following quantities are known: correlation in the signal produced by the multipath propagation; time and frequency correlation of the amplitude fluctuations of the received signal and the width of the spectrum at the output of the channel when a sinusoidal signal is applied at the input.
There are 3 figures and 8 references: 6 Soviet and 2 non-Soviet. Two of the Soviet references are translated from English.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute of Gor'kiy University)

SUBMITTED: September 22, 1960

Card 12/13 12

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, Vitaliy Anatol'yevich, dots.

[Theory of probability with a supplement to information theory; textbook for students of the second and third year of the faculty of radio physics] Teoriia veroiatnostei s prilozheniem k teorii informatsii; uchebnoe posobie dlia studentov II i III kursov radiofizicheskogo fakul'teta. Gor'-kii, Gor'kovskii gos. univ. im. N.I.Lobashevskogo. Nos. 1-3. 1961. 123 p. (MIRA 17:4)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

3.5140 (1041)

30048
S/046/61/007/004/003/014
B139/B102

AUTHORS: Zverev, V. A., Spiridonova, I. K.

TITLE: Determination of atmospheric turbulence characteristics on the basis of statistical sound-field analysis

PERIODICAL: Akusticheskiy zhurnal, v. 7, no. 4, 1961, 428-435

TEXT: Phase and amplitude fluctuations occurring in the propagation of sound waves in the atmosphere are caused by inhomogeneities. The authors developed a method for the determination of atmospheric inhomogeneities and mean squares of phase fluctuations by measuring the correlation coefficient of a sound field in the atmosphere. L. A. Chernov (Akust. zh., 1957, 3, 2, 192-194) established a relation between the field correlation function and the autocorrelation functions of amplitude and phase fluctuations for the case of crosscorrelation:

1X

$$\overline{E_1E_2} = E_o^2 \exp(2A^2) \exp\left[\overline{A^2}\,(R_A - 1) + \overline{\varphi^2}\,(R_\varphi - 1)\right] \qquad (2),$$

where E is the field, A is the amplitude fluctuation, φ is the phase

Card 1/4

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

fluctuation, R_A and R_φ are the correlation coefficients of amplitude and phase fluctuations, respectively. The authors determined the field correlation caused only by a phase fluctuation. In this case ($A = 0$),

$$\ln R_E = \overline{\varphi^2} (R_\varphi - 1) \qquad (5)$$

is valid. For $d \ll a$, and considering that, in the case of crosscorrelation $R_\varphi = \exp(-d^2/a^2)$, Eq. (5) goes over into

$$\ln R_E = -\overline{\varphi^2} \frac{d^2}{a^2} \qquad (8).$$

d is the base, and a is the dimension of inhomogeneities. If, however, $d \gg a$, $\ln R_E = -\overline{\varphi^2}$. $\ln R_E = f(d^2)$ is a straight line which passes through the origin and forms an angle α with the abscissa: $a = \sqrt{\overline{\varphi^2}} \tan \alpha$. K. A. Norton calculated R_E from the curve $\rho k_1 = f(\rho)$ ($\rho = d/a$), and

Card 2/4

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

obtained $\ln R_E = \frac{\varphi^2}{2\alpha^2} d^2$ for $d \ll a$ (14)

and $\ln R_E = -\overline{\varphi^2}$ for $d \gg a$ (15).

If only the statistical parameters a and $\overline{\varphi^2}$ of the medium are to be calculated, the results obtained by the two methods are in good agreement. However, theoretical considerations support Norton's method and the values obtained by this theory. $R_E(d)$ is difficult to determine, since measurement results obtained at different times are influenced by the turbulence of the medium. The authors, however, made simultaneous measurements at several points, along the direction of sound-field propagation and also at right angles to it. Waves were recorded by several receivers on a four-channel magnetic tape, and the signals were evaluated in the laboratory: Signals from two channels were fed by amplifiers into two dynamic loudspeakers. Each loudspeaker was installed in a tube (to isolate the signals) with a microphone at the other end. One microphone was fixed, while the other was moved in the direction of

X

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

30048
S/046/61/007/004/003/014

Determination of atmospheric turbulence ...B139/B102

wave propagation. Via amplifiers the signals were fed from the microphones to the two correlometer inputs, and the signals from the correlometers were fed into a loop oscilloscope. L. A. Chernov, Rasprostraneniye voln v srede so sluchaynymi neodnorodnostyami. M., Izd-vo AN SSSR, 1958 is mentioned. There are 8 figures and 10 references: 9 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: K. A. Norton, J. atm. and ter. phys. 1959, 15, nos. 3/4, 206-227.

X

ASSOCIATION: Radiofizicheskiy institut pri Gor'kovskom gosudarstvennom universitete (Radiophysical Institute of Gor'kiy State University)

SUBMITTED: January 16, 1961

Card 4/4

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

35785

24.3300

S/120/62/000/001/026/061
E140/E463

AUTHORS: Zverev, V.A., Mosalov, I.V., Orlov, Ye.F., Sibiryakov, V.L.

TITLE: Spectrum analyser for film-recorded processes

PERIODICAL: Pribory i tekhnika eksperimenta, no.1, 1962, 110-117

TEXT: The authors describe a variation of the well-known optical spectrum analyser in which a periodic mask (filter) is passed before a density (or amplitude) variable negative of the process to be analysed. The disadvantages of the existing systems are the large number of filter transparencies required, the long time for a full analysis, lack of precision in the preparation of the filters and the impossibility of obtaining the spectral density at a given frequency. The authors therefore have proposed and realized an improved system using two mutually inclined diffraction gratings (Fig.3). Assuming the gratings to be sinusoidal (in the first approximation), the transmissibilities of the gratings are described by

$$A + B \cos \left[(2\pi/d)(x \cos \alpha + y \sin \alpha) - \varphi_1\right] \quad (1)$$

$$A + B \cos \left[(2\pi/d)(x \cos \alpha - y \sin \alpha) - \varphi_2\right] \quad (2)$$

Card 1/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

Since the light passes successively through the two gratings, the light flux at the output of the second grating will be the product of (1) and (2). Now, if we let the gratings vibrate with common amplitude a and frequency Ω in phase opposition, and in the directions α and $-\alpha$, the photoelement current will have a component proportional to the spectral density of the investigated function. As the angle α varies from 0 to 30° all values of spectral density will be obtained with periods between D (the window width, fundamental frequency) up to d (the grating period). The frequency Ω determines the rate at which the results are obtained. The possibility exists of varying α manually, thus permitting interesting frequency components to be found rapidly. The use of narrow band amplifiers tuned to some harmonic of Ω is useful in filtering out closely related components. The maximum intensity is that of the harmonic with index close to $a/d \gg 1$. The output is to a self-balancing potentiometer, with the lateral displacement of the paper controlled by a special follower servomechanism to give a scale proportional to frequency as the angle α is varied. In the

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

instrument constructed the grating period is d = 0.2 mm, the maximum relative angle of rotation is 14°10', the window D = 100 mm. The resolution permits harmonics of D up to index 250 to be measured. Some test spectrograms of multi-frequency sinusoidal signals are given. There are 9 figures.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri GGU (Scientific Research Institute of Radiophysics of GGU)

SUBMITTED: March 6, 1961

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

35257

S/046/62/008/001/003/018
B139/B102

24,1300

AUTHORS: Andreyev, G. A., Zverev, V. A.

TITLE: Method of investigating the statistical properties of media with random inhomogeneities by means of continuous frequency-modulated acoustic irradiation

PERIODICAL: Akusticheskiy zhurnal, v. 8, no. 1, 1962, 42 - 48

TEXT: When investigating the propagation of waves in static inhomogeneous media, the characteristics of inhomogeneities and the signal parameter changes caused by them must be known. The authors conducted experiments with saw-tooth sound waves. The signals arriving at the receiver are delayed against the carrier wave by the time $\Theta_i(t) = 2r_i(t)/c$ ($r_i(t)$ = distance between the i-th elementary scattering space and the sound pickup). The correlation function of the sum of signals equals the sum of correlation functions of the summands, i.e.,

$\psi_u(\tau) = \overline{u(t)u(t+\tau)} = \sum_{i=1}^{N} \overline{u_i(t)u_i(t+\tau)}$ (3). Via the expression

Card 1/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

POPOVA, M.I.; ZVEREV, V.A.

Use of torpedo from detonating blast hole for cleaning oil-well filters. Nefteprom. delo no.2:17-'63 (MIRA 17:7)

1. Krasnokamskoye neftepromyslovoye upravleniye.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.A.

SOV/144-59-9-1/15

AUTHOR: Vasil'yev, V.G., Docent, Acting Head of the Chair of Electrical Apparatus; and Zverev, V.A., Assistant

TITLE: Electronic Analoguing of the Hysteresis Characteristics of Magnetic Materials

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1959, Nr 9, pp 3-10 (USSR)

ABSTRACT: A number of articles dealing with electronic analogues (Kogan and Rozenblat, Refs 1, 2) have given a description of the circuits which are suitable for analoguing a simple rhomboic hysteresis loop. Two such circuits are shown in Figs 1 and 2. The circuit of Fig 1 consists of a limiter, a memory element and an amplifier. The insensitive zone or the width of the hysteresis loop is determined by the cut-off voltages of the limiter diodes, while the slope of the loop is determined by the output amplifier. The circuit of Fig 2 comprises an adding amplifier, a limiter and a memory device which is in the form of an integrator. If one of the above circuits is fitted with a functional converter, whose parameters are designed in accordance with the hysteresis loop of actual ferromagnetic material, it is possible to obtain a

Card 1/4

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

characteristic which would coincide with the actual function B = f(H). An example of such a device is shown in Fig 3. The system is based on the circuit of Fig 1. The difference between the circuits of Fig 3 and Fig 1 lies in the fact that the output amplifier of the latter is replaced by a functional converter. The functional transformation consists of three linear segments, whose limit points are determined by the cut-off voltages of the diodes, while the slope is determined by the ratio of the total resistance of the feedback circuit to the input resistance. Hysteresis loops obtained by this circuit are shown in Fig 4. Analysis of the characteristics obtained by this device shows that the loops can be analogued only approximately. A different circuit is therefore suggested. This is shown in Fig 5. The device is suitable for the analoguing of the so-called "preliminary hysteresis loop". The circuit of Fig 5 is characterised by the fact that the analogue amplifier is preceded not by one but by a series of condensers. Each of the condensers is connected to the input of the

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

amplifier through a suitable diode limiter. The relationship between the output and the input signals of this type of analogue is expressed by

$$U_{BbIX} = U_{BX} \frac{C_{BX}}{C_o} = U_{BX} \operatorname{tg} \alpha, \quad \alpha = \operatorname{arc\,tg} \frac{C_{BX}}{C_o} \qquad (1)$$

where C_{BX} is the capacitance at the input of the amplifier, C_o is the capacitance in the feedback circuit, and α is the slope of the transfer characteristic. The coefficients of the circuit of Fig 5 are indicated in Table 1. The loop taken by means of the analogue of Fig 5 is shown in Fig 6, while the partial-symmetrical and non-symmetrical cycles (taken by the circuit) are illustrated in Fig 7. Further circuits, similar to that of Fig 5, are illustrated in Figs 8 and 9; the circuit of Fig 8 consists of a limiter, a functional memory device, an integrator and a functional converter; the circuit of Fig 9 consists of a functional converter, a functional

Card 3/4

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SOV/144-59-9-1/15

Electronic Analoguing of the Hysteresis Characteristics of Magnetic Materials

memory device and an integrating amplifier. The parameters of these circuits can be determined graphically by the method of successive approximations. The loops and partial-symmetrical and non-symmetrical cycles analogued by the circuit of Fig 9 are illustrated in Fig 10; the actual loops and partial cycles are shown in Fig 11.

There are 11 figures, 3 tables and 3 Soviet references, one of which is translated from English.

ASSOCIATION: Kafedra elektricheskikh apparatov, Khar'kovskiy politekhnicheskiy institut (Chair of Electrical Apparatus, Khar'kov Polytechnical Institute)

Card 4/4

SUBMITTED: May 15, 1959

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SHALYTKIN, N.L.; ZVEREV, V.A. (Gor'kiy)

Fastening with a metallic nail in rupture of the tubercle of the tibia. Ortop., travm. protex. 17 no.5:64 S-O '56. (MLRA 10:1)
(TIBIA--FRACTURE)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, M.A., zootekhnik; PIRVSKIY, V.I., zootekhnik

Year-round raising of broiler chicks on the "Voskhod" Collective Farm. Zhivotnovodstvo 21 no.5:52-57 My '59. (MIRA 12:7)

1. Kolkhoz "Voskhod," Krasnopolyanskogo rayona, Moskovskoy oblasti (for Zverev).
(Poultry)

AUTHOR: Zverev, V. A. 6-58-3-8/16

TITLE: A Calculation of the Deformation Profile of the Correction Surface in the Rectifying Glass of Aerophotographic Apparatus (Raschet profilya deformirovaniya korrektsionnoy poverkhnosti vyravnivayushchego stekla v aerofotoapparatakh)

PERIODICAL: Geodeziya i Kartografiya, 1958, Nr 3, pp. 40 - 43 (USSR)

ABSTRACT: In his paper (Geodeziya i Kartografiya, 1958, Nr 3, pp. 37 - 39) Professor M. M. Rusinov gave formulae for the calculation of the deformation of the first surface of the rectifying glass in aerophotographic apparatus for the purpose of compensating the residual distortion of the optical system. An example of the calculation according to this formula is given here. From the comparison of the profile abscissa of the deformed surface with the amount of distortion to be corrected is to be seen that the amount of deformation is higher than the amount of distortion. Therefore the technical tolerances in the treatment of the deformed surface of the recti-

Card 1/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

6-58-3-8/16

A Calculation of the Deformation Profile of the Correction Surface in the Rectifying Glass of Aerophotographic Apparatus

fying glass need not be especially strict. There are 2 figures and 1 table.

AVAILABLE: Library of Congress

1. Photographic equipment--Characteristics

Card 2/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, Vitaliy Arkad'yevich, assistent

Actual ferromagnetic material in electronic models of magnetic elements. Izv. vys. ucheb. zav.; elektromekh. 5 no.5:563-565 '62. (MIRA 15:5)

1. Kafedra elektricheskikh apparatov Khar'kovskogo politekhnicheskogo instituta.

(Cores (Electricity))
(Ferrates—Electromechanical analogies)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

CHESNOKOV, N.D.; ZVEREV, V.A.; Prinimali uchastiye: BOGDANOVA, N.G.; BELIKOV, P.Ye.; FOMINSKIY, M.K.; BAZHENOV, M.M.

Making roll cast iron in an acid open-hearth furnace. Lit. proizv. no.2:4-7 F '63. (MIRA 16:3)

(Cast iron--Metallurgy)

ZVEREV, V.I.; BRODSKIY, L.N.

Industrial use of furniture panels with sawdust cores. Der.prom.5 no.8:18-19 Ag '56. (MLRA 9:10)

1.Khar'kovskiy mebel'nyy kombinat imeni Shchorsa.
(Furniture industry)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.I.

Device for determining the brand of steel. Mashinostroitel' no.4:
17 Ap '65. (MIRA 18:5)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.I.; BRODSKIY, L.N.

Finishing radio cabinets with grained paper. Der. prom. 6 no.9:21-22 S '57. (MIRA 10:11)

1. Khar'kovskiy mebel'nyy kombinat im. Shchorsa.
(Cabinetwork) (Graining) (Paper products)

ZVEREV, V. I.
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

"Cases of Reconnecting Coils in Power Transformers," Elek. Stan., no. 2, 1949. Engr.

STUDNIKOVA, N.I.; ZYKOV, S.I.; MILOVSKIY, A.V.; BURMIN, Yu.A.; ZVEREV, V.L.

Age of the metamorphic and metasomatic rocks of the Mugodzhar Hills. Vest.Mosk.un.Ser.4: Geol. 19 no.5:42-46 S-O '64. (MIRA 17:12)

1. Kafedra geokhimii Moskovskogo universiteta.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, Vl. (g.Penza)

Workers of the evening and night shifts do not get due attention. Sov.profsoiuzy 7 no.15:42-44 Ag '59.
(MIRA 12:12)

(Penza--Night work)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.M.

A good manual. ("Rug manufacture" by B.M. Fedosenko, A.G. Utkina. Reviewed by V.M. Zverev). Tekst. prom. 17 no.8:63 Ag '57.
(MLRA 10:9)

1. Glavnyy inzhener Moskovskoy fabriki imeni Markova.
(Rugs) (Fedosenko, B.M.) (Utkina, A.G.)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SERKOVA, V.I.; ZVEREV, V.M.

Synthesis of asymmetric dimethyl-phenyl-n-metoxyphenylacetylenyl ethylene glycol. Trudy LTI no.59:19-21 '61.

(MIRA 17:9)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V. N.

ZVEREV, V. N. Ocherk poleznykh iskopaemykh Iakutskoi respubliki. (IN Vittenburg, P. V. ed. IAkutiia; sbornik statei. Leningrad, AN SSSR, 1927, p. 165-196)

DLC: DK771.Y2W2

CSt CSt-H CtY ICU MiU NN

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.P.

Chemical composition of atmospheric precipitation on the Caucasian coast of the Black Sea. Dokl. AN SSSR 142 no.5:1158-1161 F '62. (MIRA 15:2)

1. Predstavleno akademikom D.I.Shcherbakovym.
(Black Sea region—Precipitation(Meteorology))

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

REZANOV, I.A.; NGO TKHYONG SHAN; SHEYNMANN, Yu.M.; RATS, M.V.; KRUG, O.Yu.; ZYRYANOV, V.N.; RAKCHEYEV, A.D.; YAKOVLEVA, Ye.B.; PETROVA, M.A.; PETROV, Yu.I.; KUZNETSOV, Ye.A.; YUDINA, V.V.; BARDINA, N.Yu.; SIMANOVICH, I.M.; ATANSYAN, S.V.; SERGEYEVA, A.M.; PARFENOV, S.I.; RUTKOVSKI, Yatsek [Rutkowski, Jacek]; MAKHLINA, M.Kh.; ZVEREV, V.P.; TERNOVSKAYA, V.T.; SAMOYLOVA, R.B.; YERMAKOVA, K.A.; BYKOVA, N.K.; MEYYEN, S.V.; BARSKOV, I.S.; IL'INA, L.B.; BABANOVA, L.I.; DOLITSKAYA, I.V.; GORBACH, L.P.; BUTS'KO, S.S.; TRESKINSKIY, S.A.; SVOZDETSKIY, N.A.; PRYALVKHINA, A.F.; GROSVAL'D, M.G.; MODEL', Yu.M.; GORYAINOVA, I.N.; MEDVEDEVA, N.K.; MYALO, Ye.G.; DOBROVOL'SKIY, V.V.; KHOROSHILOV, P.I.; CHIKISHEV, A.G.

Brief news. Biul. MOIP. Otd. geol. 40 no.3:122-154 My-Je '65.
(MIRA 18:8)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.P.

Sulfate-calcium equilibrium in underground waters. Dokl. AN SSSR 164 no.2:403-405 S '65. (MIRA 18:9)

1. Proizvodstvennyy i nauchno-issledovatel'skiy institut po inzhenernym izyskaniyam v stroitel'stve. Submitted January 20, 1965.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.P.

Role of the chemical composition of the atmospheric precipitation in the formation of ground waters in the Medvenka Basin. Trudy Lab. gidrogeol.probl. 45:62-66 '62. (MIRA 15:6)
(Medvenka Valley—Water, Underground—Composition)
(Medvenka Valley—Precipitation (Meteorology))

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.P.

Conditions governing the formation of calcite crystals in bottom sediments of Lake Sevan. Trudy Lab.gidrogeol.probl. 45:85-89 '62. (MIRA 15:6)

(Sevan,Lake--Calcite crystals)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.S.

Faultless fabrics. Tekst. prom. 20 no. 11:86 N '60.
(MIRA 13:12)
(Moscow--Woolen and worsted manufacture--Labor productivity)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.S.

Production line for the finishing of woolen fabrics. Tekst.prom.21 no.1:94 Ja '61. (MIRA 14:3)

(Woolen and worsted manufacture)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.S.

New automatic looms. Tekst.prom. 21 no.2:91 Ja '61.
(MIRA 14:3)

(Looms)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

OL'KHOVSKIY, I.A.; ZVEREV, V.S.; KRINICHANSKAYA, L.A.; Prinimali uchastiye: BUNIM, L.L.; TAINKIN, A.S.; RUDNITSKIY, B.I.

Increasing the resistance of firebox hearths in steam boilers with liquid slag removal. Ogneupory 30 no.12:16-19 '65. (MIRA 18:12)

1. Krasnodarskiy filial Nauchno-issledovatel'skogo instituta po montazhnym i spetsial'nym stroitel'nym rabotam (for Ol'khovskiy, Zverev, Krinichanskaya).

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ABEL'SKAYA, N. B.; GRACHEVA, Ye. G.; YERSHOVA, Z. V.; ZVEREV, V. S.; MASLOVSKAYA, V. V.; RUDAYA, L. Ya.

Preparation of long-lived Bi^{210}. Radiokhimiia 4 no.3:377-378 '62. (MIRA 15:10)

(Bismuth--Isotopes)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.S.

Promote the manufacture of nonwoven materials by all means.
Tekst. prom. 20 no. 12:86 D '60. (MIRA 13:12)
(Nonwoven fabrics)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

S/186/62/004/003/022/022
E075/E436

AUTHORS: Abel'skaya, N.B., Gracheva, Ye.G., Yershova, Z.V., Zverev, V.S., Maslovskaya, V.V., Rudaya, L.Ya.

TITLE: Preparation of long-lived Bi^{210}

PERIODICAL: Radiokhimiya, v.4, no.3, 1962, 377-378

TEXT: To confirm the investigations with isomer Bi^{210}, reported by L.I.Rusinov, it was essential to obtain a sample of Bi containing a large quantity of the isomer and a minimum quantity of other radioactive admixtures. The metallic Bi subjected to irradiation was thoroughly purified from Po and the elements activated by neutrons Zn, Ag, Cd, Co, Sr, Sb, Se, Te. A sample of Bi enriched in Bi^{210} was obtained from the purified Bi.

SUBMITTED: May 29, 1961

Card 1/1

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.S.

Awards for efficiency promoters and inventors. Tekst. prom. 21 no. 4:90 Ap '61. (MIRA 14:7)
(Moscow Province—Textile industry—Technological innovations)

Colorimetric determination of small quantities of silica in solutions, minerals and technical products. I. P. Alimarin and V. S. Zverev. *Trans. Inst. Econ. Mineral.* (U. S. S. R.) No. 60, 15 pp. (1933). A crit. survey of gravimetric and colorimetric methods for the detn. of small quantities of SiO_2. The method of Dienert and Wandenbulcke, based on the formation of $H_4[Si(Mo_2O_7)_6].xH_2O$, gives the best results. By this method amts. of SiO_2 from 5 to 0.005% can be detd. The presence of large amts. of mineral acids and their easily hydrolyzable salts interferes and it is then recommended to add NaOAc. The effects of P and Fe present in the soln. were counteracted by the addn. of excess H_3PO_4, which destroys the colored phosphomolybdate complex and forms a colorless acid phosphate of Fe. The phosphomolybdate color can also be removed by means of tartaric or citric acids. The effect of F is avoided by the addn. of $AlCl_3$, which forms H_3AlF_6 from H_2SiF_6. A complete bibliography for 1882 to 1932 inclusive is given.

S. L. Madorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

a - 1

Colorimetric determination of small quantities of silica in solutions, minerals, and technical products. I. P. Alimarin and V. S. Zverev (Trans. Inst. Econ. Min. U.S.S.R., 1934, No. 63, 15 pp.).—A crit. survey. Dienert and Wandenbulcke's method, based on the formation of $H_8[Si(Mo_2O_7)_6]$, is best for 0·005—5% SiO_2. In presence of large amounts of mineral acids and their hydrolysable salts, NaOAc should be added. The effects of P and Fe are counteracted by adding excess of H_3PO_4. The phosphomolybdate colour can also be removed with tartaric or citric acid. The effect of F' is avoided by adding $AlCl_3$, which forms H_3AlF_6 from H_2SiF_6.

Ch. Abs. (e)

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

MACHERET, L.I., inzh.; ZVEREV, V.V., inzh.

Choice of the angle of the superimposition and the width of paper tape in insulating high-voltage cables. Vest. elektroprom. 31 no.8:45-47 Ag '60. (MIRA 15:5)
(Electric cables)
(Electric insulators and insulation)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

MACHERET, L.I., insh.; ZVEREV, V.V., insh.

Insulation machines for the manufacture of high-voltage cables. Vest. elektroprom. 31 no.11:53-56 N '60. (MIRA 13:12)
(Electric cables)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

DNESTROVSKIY, Nikolay Zel'manovich; POMERANTSEV, Sergey Nikolayevich [deceased]; ZVEREV, V.V. [deceased]; SHPICHINETSKIY, Ye.S., kand. tekhn. nauk, retsenzent; POSTNIKOV, N.N., inzh., retsenzent; RZHEZNIKOV, V.S., red.; KOSOLAPOVA, E.F., red. izd-va; BERLOV, A.P., tekhn. red.

[Brief manual on the treatment of nonferrous metals and alloys] Kratkii spravochnik po obrabotke tsvetnykh metallov i splavov. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 410 p. (MIRA 14:8)

(Nonferrous metals) (Metalwork)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

1. MAGIDSON, O. Yu., FEDOTOVA, M.V., ZVEREV, V.V.,

2. USSR (600)

"Quinoline Compounds as a Source of Medical Preparation--VIII. Anesthetics of the Series of Amides of Chinchonic Acid," Zhur. Obsch. Khim., 9, No 22, 1939. Synthetic and Pharmacological Dept., All-Union Sci-Res Inst imeni S. Ordzhonikidze, Moscow. Received 17 June 1939.

9. [redacted] Report U-1626, 11Jan 1952.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1

PROCESSES AND PROPERTIES INDEX

60

17

The method of biological evaluation of Indian hemp according to Straub and Gayer. V. V. Zverev. *Byull. Nauch. Issledovatel Khim.-Farm. Inst.* 1931, 100-10.— The biol. evaluation of Indian hemp in the form an alc. and acetone soln. was found to be in accordance with the method introduced by Straub and Gayer. The exptl. procedure is described.

A. A. Bochtlingk

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1

PROCESSES AND PROPERTIES INDEX

CA

11H

Testing of bile stimulants. V. V. Zyeev. *Klim. Farm. Prom.* 1935, No. 2, 126-8(1935).—Rabbits tested by Stransky's method showed that high bile stimulation is produced by hexamethylenetetramine and decholin.

L. Nasurevich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"
ACC NR: AP7002301 SOURCE CODE: UR/0144/66/000/009/1032/1037

AUTHOR: Shukshunov, V. Ye.; Zverev, V. V.

ORG: none

TITLE: Automatic compensation for dynamic error of temperature transducers with high thermal inertia

SOURCE: IVUZ. Elektromekhanika, no. 9, 1966, 1032-1037

TOPIC TAGS: temperature transducer, circuit design

ABSTRACT: The scientific research laboratory of automation of production processes at the Novocherkassk Polytechnical Institute has developed and tested a circuit designed for correction of dynamic error in thermoreceptors with time constants from 800 seconds to 1/10 second. The principle of the electric correction is series connection of the temperature transducer and a connecting link whose transfer function is the inverse of the transfer function of the transducer. Since the transfer functions of industrial thermoreceptors can be approximated by an inertial link of first, second or higher orders, the correcting link must be a first, second or higher order differentiating link. The device developed is based on an operational amplifier with automatic zero stabilization and flexible feedback. Orig. art. has: 3 figures and 14 formulas. [JPRS: 39,183]

SUB CODE: 09 / SUBM DATE: 30Dec64 / ORIG REF: 003

Card 1/1 UDC: 62-52+681.2.083.8

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

BELUGIN, D.A., kandidat voyennykh nauk, polkovnik; ZVEREV, V.Ya., polkovnik; DANILIN, V.N., inzhener-polkovnik; VOROB'YEV, P.A. polkovnik, redaktor; KONOVALOVA, Ye.K., tekhnicheskiy redaktor.

[Artillery reconnaissance by instruments; a textbook for artillery schools] Artilleriiskaia instrumental'naia razvedka; uchebnik dlia artilleriiskikh uchilishch. Moskva, Voen.izd-vo M-va obor.SSSR, 1956. 483 p. (MIRA 10:6)

(Military reconnaissance)

(Artillery, Field and mountain)

SOV/110-58-11-16/28

AUTHORS: Zverev, V.V. (Engineer), and Utrobin, B.V. (Engineer).

TITLE: Theory and Practice of Packing Copper and Aluminium Cores of Power Cables (Teoriya i praktika uplotneniya mednykh i alyuminiyevykh zhil silovykh kabeley).

PERIODICAL: Vestnik Elektropromyshlennosti, Nr.11, 1958, pp.56-60, (USSR).

ABSTRACT: Heavy-section power cables are stranded for flexibility; then the conductors are packed by compression in special rollers to increase the filling factor and reduce the external diameter. The benefits that result from this process are enumerated. A simplified account is given of the processes that occur during the packing of the conductors. The process is considered one layer at a time and it is assumed that the first layer is packed before the second lay is applied. In the usual construction, where the conductors are not packed in this way, all the strands are of the same diameter, but with the packed construction each radial layer should contain wires smaller in diameter than those beneath it so that

Card 1/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SOV/110-58-11-16/28

Theory and Practice of Packing Copper and Aluminium Cores of Power Cables.

the wires lie correctly on the underlying packed layers. Equations are given by means of which wire diameters for successive layers may be calculated. Expressions are also given for the external diameters of conductors. The equipment required for packing conductors in the factory is described. The rolls used to pack the conductors are of special profile and a description of these is given. Types of profile used are sketched in Figs.2, 3 & 4. There are 5 figures, 1 table.

SUBMITTED: April 24, 1957.

1. Electric cables--Cores 2. Electric cables--Construction

Card 2/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SOV/110-58-11-22/28

AUTHORS: Pashchenko, V.Ye. (Engineer) and Zverev, V.V. (Engineer)

TITLE: Discussion of Engineer I.V. Kuranov's Article (Po povodu stat'i Inzh. I.V. Kuranova).

PERIODICAL: Vestnik Elektropromyshlennosti, Nr.11, 1958, p.71, (USSR)

ABSTRACT: This is a discussion of the previous article on "Increasing the output of cable-making machinery". These authors claim that although Kuranov's ideas are all right in principle, his approach is over-simplified. For example, cable-making machines with armouring heads usually have additional heads for applying paper, and these cannot necessarily be speeded-up in the same way. In particular, it is difficult to maintain constant tension of the paper at variable machine speeds. Kuranov's suggestion may be applicable to simple machines with no paper-winding heads, provided that it is possible to change all the reels at once, but even then the increase in output will not be so great as he claims. Each

Card 1/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SOV/110-58-11-22/28

Discussion of Engineer I.V. Kuranov's Article.

particular case must be examined on its merits.

1. Electric cables--Production 2. Machines--Performance

Card 2/2

ZVEREV, V. A.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

(1)

Wireless Engineer
June 1954
Acoustics and Audio Frequencies

Modulation Method of Measurement of Ultrasonic Dispersion.—V. A. Zverev. (C. R. Acad. Sci. U.R.S.S., 1st Aug. 1953, Vol. 91, No. 4, pp. 791–794. In Russian.) The method was used in the experimental determination of dispersion in a long Ni wire, using a 1-Mc/s ultrasonic wave modulated at 100 kc/s. Fractional differences of velocity down to $\sim 2 \cdot 4 \times 10^{-3}$ were readily observed.

14/8/54

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

GUDOVICH, G.A., inzhener; ZVEREV, V.A., inzhener; OSIPOV, A.M., inzhener.

Automatic reclosing diagrams for switches of remote controlled units. Elek.sta. 25 no.2:51-52 F '54. (MLRA 7:2)

(Electric switchgear)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

4921. A CAPACITATIVE ANALYSER OF A SOUND FIELD. 534.231
V.A.Zverev, V.M.Bokor and N.E.Lur'e.
Akust. Zh., Vol. 1, No. 3, 218-20 (1955). In Russian.

An experiment is described in which the sound field in a liquid is investigated by means of the variation of the permittivity with pressure in the medium. In water a change of permittivity at 5 Mc/s of the order of 10^{-8} is obtained for a sound frequency 85 kc/s and pressure change of 10^{6} bars.

C.R.S.Manders

3

Gor'kiy Res. Phys-Tech. Inst., Gor'kiy State U.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1

0

534.213

4906. THE PROBLEM OF INTERACTION OF SOUND WAVES. A.G.Gornlik and V.A.Zverev. Akust. Zh., Vol. 1, No. 4, 330-[illegible] (1955). In Russian.

A method similar to that of I.I.Bershtein can be employed for detecting and studying acoustic wave interaction in fluids. The very small modulation caused by this interaction can be detected but its amplitude and phase can also be determined.

C.R.S.Manders

2

ZVEREV, V. A.
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

Gorki Physical Research Institute, Gorki State University, Gorki

"Modulation Method for Measurements of Ultrasonic Dispersion" paper presented at 2nd International Congress on Acoustics, Cambridge, Mass., 17-23 June 1956.

So: B-100200

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.A.

Feasibility of absolure calibration of sound emitters and receivers using radiation pressure as a basis and not using a radiometer. Akust.zhur.2 no.4:378-379 O-D '56. (MLRA 10:1)

1. Gor'kovskiy issledovatel'skiy fiziko-tekhnicheskiy instutut pri Gor'kovskom gosudarstvennom instutute.

(Sound--Measurement)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.A.

46-4-3/17

AUTHOR: Zverev, V.A.

TITLE: The Effect of Directivity of a Receiving System on the Mean Intensity of a Signal Received as a Result of Scattering. (Vliyaniye napravlennosti priyemnogo ustroystva na srednyuyu intensivnost' signala, prinimayemogo za schet rasseyaniya)

PERIODICAL: Akusticheskiy Zhurnal, 1957, Vol.III, Nr 4, pp.329-336 (USSR)

ABSTRACT: There are two ways of discussing the propagation of waves in a medium with small random non-uniformities in the refractive index. Obukhov (Ref.5), Chernov (Ref.4), and a number of other workers have solved the problem of amplitude and phase fluctuations of a wave at some point on the wave front as functions of the distance L traversed by the wave in a non-uniform medium. In papers concerned with scattering of waves (Refs.1, 2 and 3) the mean intensity of scattered radiation at some angle θ to the direction of the wave vector of the undisturbed wave is computed. Which of these two methods is adopted depends on the directivity of the receiving and transmitting antennae.

Card 1/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

The Effect of Directivity of a Receiving System on the Mean Intensity of a Signal Received as a Result of Scattering.

In fact, in the case of non-directional antennae, the dimensions of which are much less than the wavelength, the first method is used. The second method is used in the case of very directional antennae. However, it is shown in the present paper that these criteria are insufficient. In addition, one must know the "directivity of the radiation from the non-uniformities" (this concept is defined in the present paper). Expressions are derived for the dependence of the mean intensity of the received scattered intensity on the directivity of the receiving system. It is assumed that the scattering takes place on non-uniformities in the speed of propagation of the waves and that the scattering volume is in the Fraunhofer region relative to the receiving system. It is shown that in order to obtain the scattered intensity it is sufficient to know the correlation function in directions perpendicular to the distances which do exceed the dimensions of the receiver. There are 2 Russian and 3 English references.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

46-4-3/17

The Effect of Directivity of a Receiving System on the Mean Intensity of a Signal Received as a Result of Scattering.

ASSOCIATION: Scientific Research Radiophysical Institute of the Gorki State University (N.-i.radiofizicheskiy institut pri Gor'kovskom gosudarstvennom universitete)

SUBMITTED: January 22, 1957.

AVAILABLE: Library of Congress.

Card 3/3 1. Antennas 2. Microwave scattering 3. Scattering-Intensity-Theory

ZVEREV, V. A.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

"Propagation of a Modulated Wave in a Randomly Inhomogenous Medium."

with KALACHEV, A. L., "Frequency Modulation Applied to Acoustic Measurements"

paper presented at the 4th All-Union Conf. on Acoustics, Moscow, 26 May - 4 Jun 58.

DENISOV, N. G., ZVEREV, V. A. (NIRFI, Gor'kiy)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

"The Wave Propagation in Mediums With Random Heterogeneities".

report presented at the All-Union Conference on Statistical Radio Physics, Gor'kiy, 13-18 October 1958. (Izv. vyssh uchev zaved-Radiotekh., vol. 2, No. 1, pp 121-127) COMPLETE card under SIFOROV, V. I.)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

SOV/46-4-4-4/20

AUTHORS: Zverev, V.A. and Kalachev, A.I.

TITLE: Measurement of the Interaction of Sound Waves in Liquids (Izmereniye vzaimodestviya zvukovykh voln v zhidkostyakh)

PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol 4, Nr 4, pp 321-324 (USSR)

ABSTRACT: Zverev and Gorelik (Ref 1) showed experimentally that if a high-frequency wave field interacts at right-angles with a low-frequency field, then the high-frequency wave is phase modulated. The present paper describes an approximate calculation and quantitative measurements of such an interaction. This interaction is due to non-linearity of the medium which appears as non-linearity of the hydrodynamic equations and the equation of state. The equation-of-state non-linearity predominates and calculations are based on the assumption that the hydrodynamic non-linearity can be neglected. The phase modulation of the high-frequency wave is due to a periodic change of its velocity in the field of the stronger low-frequency wave. The waves studied by the authors had frequencies of 1.3×10^6c/s and 3×10^3c/s respectively. The experimental technique employed followed Ref 1. The apparatus used is shown schematically in Fig 1. It consists of a high-frequency generator 1, a phase-shifter 2, a high-frequency amplifier 3, a balancing

Card 1/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

amplifier 4, a detector 5, a low-frequency amplifier and filter 6, a ZG-10 low-frequency generator 7, a VKS-7 valve voltmeter 8, a LV-9 valve voltmeter 9, a Plexiglas bath 10, a quartz vibrator (producing 1.3×10^6c/s) 11, a quartz receiver 12, bellows 13 and an electrodynamic vibrator (producing 3×10^3c/s) 14. Measurements were made in tap (mains) water, in 93.5% ethyl alcohol, and in 21.6% NaCl solution. Fig 3 gives the vertical distribution of pressure above the centre of the high-frequency vibrator. The ordinate give the values of the logarithm of the voltage produced by a $BaTiO_3$ probe used to measure pressure, while the abscissa gives the distance from the vibrator. Distribution of pressure (in bars) along a horizontal line away from the high-frequency vibrator is given in Fig 4. In both Figs 3 and 4 curves 1, 2 and 3 denote tap water, NaCl solution and ethyl alcohol respectively. The pressure distributions given in Figs 3 and 4 show that the high-frequency waves are not planar. This fact was allowed for in calculations of the rate of change of the sound velocity c with pressure p (dc/dp). The value of dc/dp was obtained from the measured phase modulation of the high-frequency wave. The results obtained are given in a table on p 324. The sixth column gives the values of dc/dp

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

obtained by the present authors; the seventh column gives dc/dp calculated from static measurements described in Refs 2, 3. From the results obtained the values of the constant b which occurs in the equation of state $P = a\rho + b\rho^2$ (P and ρ are departures of pressure and density from their equilibrium values, $a = c_0^2$ = the square of sound velocity at infinitely small densities and b = a constant for a given medium) were obtained for the three liquids investigated. The values of b and b/a are given in the third and fourth columns of the table. The values of the ratio B/A which occurs in the equation of state $P = A\rho/\rho_0 + (B/2)(\rho/\rho_0)^2$ were also obtained and are given in the fifth column of the table. The latter equation of state comes from Ref 4. The authors' estimate the accuracy of their values of dc/dp to be 17%. There are 4 figures, 1 table and 5 references, 3 of which are American and 2 Soviet.

ASSOCIATION: Gor'kovskiy gosudarstvennyy universitet (Gor'kiy State University)

SUBMITTED: September 18, 1957

69946

SOV/141-2-4-1/19

8

9.9000

AUTHORS: Denisov, N.G. and Zverev, V.A.

TITLE: Some Problems in the Theory of Wave Propagation in Media With Random Irregularities (A Review)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 4, pp 521 - 542 (USSR)

ABSTRACT: The present review discusses methods of solution of phenomenological problems in the theory of wave propagation in media with random irregularities, i.e. the methods of calculation of the statistical properties of the field of a wave which has passed through a nonhomogeneous layer. Among these statistical properties are the amplitude and phase fluctuations and the corresponding correlation functions. The discussion also includes the diffraction at irregular screens and certain problems in scattering theory. The review covers mainly those topics which have not been considered in existing reviews and monographs, e.g. those by Chernov and Ratcliffe (Refs 1, 3). Moreover, in distinction to the existing reviews and monographs, the present paper includes a discussion

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

69946

Some Problems in the Theory of Wave Propagation in Media With Random Irregularities (A Review)

SOV/141-2-4-1/19

of the regular refraction of waves in a non-uniform layer. The paper is divided into four sections, namely: 1) geometrical optics approximation;
2) the method of continuous perturbations;
3) diffraction of waves by an irregular screen and
4) the scattering of waves by small irregularities.
There are 31 references, of which 19 are Soviet, 4 German and 8 English.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute of Gor'kiy University)

SUBMITTED: June 15, 1959

Card 2/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

69077
S/120/60/000/01/012/051
E192/E382

9.6000

AUTHORS: Zverev, V.A. and Orlov, Ye.F.

TITLE: Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, Nr 1, pp 50 - 57 (USSR)

ABSTRACT: The instrument is illus ed schematically in Figure 1. S is a light source which illuminates two parallel films Π_1 and Π_2. The processes to be investigated $g(x_1)$ and $f(x)$ are recorded on the films along the "window" having a length $D_{makc} = 300$ mm. The transparency $f(x)$ of the film Π_2 as a function of x corresponds to a time-dependent process $f(t).x = vt$, where v is the velocity of motion of the film during the recording of the signal. The light transmitted through the superimposed films Π_1 and Π_2 falls on a set of photo cells. The current of the photo

Card 1/5

Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

cells is proportional to the light flux impinging on it and can be expressed by:

$$i = B \int_{-D/2}^{+D/2} f(x) g(x_1) dx \qquad (3)$$

If the film Π_1, having a transparency $g(x_1)$ is moved with respect to Π_2 by a quantity ξ, the current is:

$$i_\xi = B \int_{-D/2}^{+D/2} f(x) g(x - \xi) \, dx \qquad (4)$$

The quantity measured by the meter 1 (Figure 1) and recorded by a registering device 2 is proportional to the correlation function of the process $f(t)$ and $g(t)$ at the point ξ. By changing ξ, which can be done by

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

moving one of the films with respect to the other, it is possible to determine the type of the correlation function. In order to determine the spectrum of $f(x)$ it is necessary to express $g(x)$ in the form:

$$g(x) = \cos k_n (x - \zeta) \quad (5)$$

with different k_n. If $k_n = 2\pi n/D$, then:

$$i_\zeta = BDC_n \cos (k_n \zeta - \varphi_n) \quad (6)$$

which shows that the amplitude of the output signal is proportional to the spectral amplitude of the signal $f(x)$. The instrument constructed on the above principle had the frequency range from 1/300 to 3 c/s. The averaging time could be as high as 300 sec. Some of the experimental results obtained by means of the instrument

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

69078

S/120/60/000/01/012/051
E192/E382

Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

are shown in Figures 2-11. Figure 3 shows a comparison of the correlation function measured by the instrument (solid line) with the calculated results which are indicated by the crosses. Figures 4 show the response of the system to a sinusoidal signal for various window lengths. Figure 5 gives the cross correlation function for a pulse train having a mark-to-space ratio of 1:2 and a sinusoidal signal. Figures 6-8 show the oscillograms of certain processes and their correlation and spectrum functions over a certain frequency bandwidth. Figure 9 shows the acceleration processes in a seat of the car, type M-21 "Volga", produced at the Gor'kiy Car Factory and the correlation function of the acceleration curve. Figures 10-11 give the recordings of human heart signals and their autocorrelation functions. There are 11 figures and 4 references, 3 of which are English and 1 Soviet.

Card4/5

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

69077
S/120/60/000/01/012/051
E192/E382

Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

ASSOCIATIONS: Nauchno-issledovatel'skiy radiofizicheskiy institut (Scientific-research Radiophysics Institute) of Gor'kovskiy gosudarstvennyy universitet (Gor'kiy State University)

SUBMITTED: December 26, 1958

Card 5/5

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"
85992

6.9200

S/141/60/003/004/018/019
E032/E314

AUTHOR: Zverev, V.A.

TITLE: Dispersion Properties of Media Containing Random Irregularities

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol. 3, No. 4, pp. 723 - 724

TEXT: In a previous paper (Ref. 1) the present author showed that during the propagation of a modulated wave in a medium containing random irregularities, the change in the character of the modulation is similar to that in the case of a dispersive medium. This change is determined by the value of the phase invariant:

$$\Theta = \varphi_o - (\varphi_1 + \varphi_2)/2 \quad (1)$$

(Ref. 2), where φ_o is the phase of the carrier and $\varphi_{1,2}$ are the phases of the side components. The calculation given in Ref. 1 was concerned only with small values of Θ^2. It follows from Eq. (1) that the correlation

Card 1/2

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

85992

S/141/60/003/004/018/019
E032/E314

function for the phase invariant can be written in the form of Eq. (2), where $\varphi_i(\rho)\varphi_j(\rho')$ are the correlation functions for phase changes on frequencies ω_i and ω_j. In accordance with Eq. (2), the spectrum of $\Phi_\rho \Phi_{\rho'}$ is the sum of the spectra of the correlation functions $\varphi_i(\rho)\varphi_j(\rho')$.

Using the method put forward by Tatarskiy in Ref. 3, a general expression is derived for the correlation function for the phase invariant (Eq. (7)). The derivation is based on Eq. (3), which was detailed by Tatarskiy in Ref. 3.
There are 3 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitet (Scientific Research Radiophysics Institute of Gor'kiy University)

SUBMITTED: April 26, 1960

Card 2/2

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

86866

S/141/60/003/005/021/026
E032/E314

9.9300

AUTHOR: Zverev, V.A.

TITLE: Scattering of Modulated Waves by Random Irregularities

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol. 3, No. 5, pp. 903 - 904

TEXT: The study of the propagation of a modulated wave can be used to obtain information about the degree of correlation for fluctuations at different frequencies. The degree of correlation can be determined by measuring the mean square of the "phase invariant" (Ref. 1)

$$\Theta = \varphi_0 - (\varphi_1 + \varphi_2)/2 \qquad (1)$$

where φ_0 is the phase of the carrier and $\varphi_{1,2}$ is the phase of the side components. In the case of complete correlation of fluctuations in phase, fluctuations in the phase invariant vanish, while in the complete absence of

Card 1/6

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

86866

S/141/60/003/005/021/026
E032/E314

correlation

$$\overline{\Theta^2} = (3/2)\overline{\varphi^2} \tag{2}$$

In a number of cases $\overline{\varphi^2}$ can be estimated from the mean square value of fluctuations in the level of the received signal. In the case of scattering by weak irregularities, correlation functions for the scattered field, phase and amplitude, at a large distance from the scattering centres, are practically identical. A sufficient condition for the identity of the correlation functions for the field and phase is a low value of the modulus of the mean square fluctuation of the complex phase. The present author determines the correlation of scattered fields at different frequencies and assumes that the angle ϑ at which the scattering is observed is independent of frequency and that dispersion is absent. Assuming that the scattering occurs on weak

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

86866

S/141/60/003/005/021/026
E032/E314

irregularities, the scattered field at a large distance from the scattering centre is written down in the form

$$E = \frac{E_o k_o^2 \sin \varkappa}{4\pi R} \varepsilon_k \qquad (3)$$

where E_o is the amplitude of the incident wave,
k_o is the wave vector of the incident wave,
$\varkappa$ is an angle representing the polarisation,
R is the distance from the scattering volume and
ε_k is given by

$$\varepsilon_k = \int_V \Delta\varepsilon \, (x, y, z) e^{iKr} \qquad (4) .$$

Scattering of Modulated Waves by Random Irregularities

In this expression, $\Delta\varepsilon$ is the fluctuation in the refractive index, $\underline{K} = \underline{k}_o - \underline{k}$, where $\underline{k}$ is the wave vector of the scattered field and

$$|K| = 2k_o \sin(\vartheta/2) \qquad (5).$$

The required correlation is defined by

$$\overline{E(k_1)E(k_2)} = \frac{E_o^2 k_1^2 k_2^2 \sin \varkappa}{(4\pi R)^2} \overline{\varepsilon_{k_1} \varepsilon^*_{k_2}} \qquad (6).$$

It then remains to compute the quantity $\overline{\varepsilon_{k_1} \varepsilon^*_{k_2}}$. It is shown that for a spherical scattering centre having radius R the latter quantity is given by

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

86866

S/141/60/003/005/021/026
E032/E314

$$\overline{\varepsilon_{k_1}\varepsilon^*_{k_2}} = \left(\overline{\varepsilon_k}\right)^2 \frac{2}{(\Delta kR)^2}\left[\frac{\sin(\Delta kR)}{\Delta kR} - \cos(\Delta kR)\right] \qquad (12)$$

where $\Delta k = 2c^{-1}(\omega_1 - \omega_2)\sin(\vartheta/2)$. For modulated vibrations $\omega_1 - \omega_2 = \Omega$, where Ω is the modulation frequency. For given ϑ, ΔkR is proportional to the ratio of the diameter of the centre to the wavelength on the modulation frequency. When the wavelength on the modulation frequency is greater than $2R$, the scattered carrier and side frequencies will be correlated and fluctuations in θ will be very small. If on the other hand the wavelength on the modulation frequency is considerably lower than $2R$ then fluctuations in θ will reach a maximum. Thus, a study of the scattering of modulated waves may be used to provide

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

86866

S/141/60/003/005/021/026
E032/E314

Scattering of Modulated Waves by Random Irregularities

information on the order of magnitude of the scattering centre and its form.
There is 1 Soviet reference.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute of Gor'kiy University)

SUBMITTED: May 5, 1960

X

Card 6/6

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, V.A., KALACHEV, A.I.

Application of frequency modulation to acoustic measurements.
Akust. zhur. 6 no.2:205-212 '60. (MIRA 13:8)

1. Nauchno - issledovatel'skiy radiofizicheskiy institut pri
Gor'kovskom gosudarstvennom universitete.
(Sound waves)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

VASIL'YEV, V.G.; ZVEREV, V.A.

Electric model of a rectifying bridge circuit. Izv. vys. ucheb. zav.; elektromekh. 4 no. 1:75-82 '61. (MIRA 14:4)
(Bridge circuits--Models)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

S/141/61/004/002/008/017
E192/E382

9,9000

AUTHORS: Zverev, V.A. and Orlov, Ye.F.

TITLE: Information transmission Rate in a Channel With Multipath Propagation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, Vol. 4, No. 2, pp. 282 - 292

TEXT: The problem of channel capacity of multipath communications channels with constant or variable parameters has been considered by various authors - R.L. Dobrushin (Ref. 4 - Teoriya veroyatnostey i eye primeneniye, 3, 395, 1958), B.S. Tsybakov (Radiotekhnika i elektronika, 1958, 4, 1427 - Ref. 5) and J. Feinstein (J. Appl. Phys., 26, 219, 1955 - Ref. 6). The problem is investigated further in this paper. It is assumed that the investigated channel is in the form shown in Fig. 1. The signal x(t) propagates through a multipath medium by various routes and at the receiver it is in the form :

Card 1/~~15~~ 12

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

$$y(t) = \sum_{r=1}^{n} a_r x(t - \tau_r) \qquad (1)$$

where a_r and τ_r are the damping coefficient and the propagation time for the small r-th path, respectively. The frequency characteristic of the multipath channel is written as:

$$k(f) = \sum_{r=i}^{n} a_r e^{i2\pi f \tau_r} \qquad (2)$$

The output signal contains correlation couplings of the type:

$$B_y(\tau) = \sum_{r=1}^{n} \sum_{s=1}^{n} a_r a_s B_x(\tau + \tau_r - \tau_s) \qquad (3)$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

where B_y and B_x are the autocorrelation functions of the signals $y(t)$ and $x(t)$. The signal at the receiver, together with the noise $z(t)$, appears at the output of the communications channel, where the total signal can therefore be expressed as:

$$v(t) = \sum_{r=1}^{n} a_r x(t - \tau_r) + z(t) \qquad (4).$$

The information-transmission rate C, when the signal at the input of the channel has normal distribution, can be expressed by (Ref. 1 - K. Shannon - The Theory of Electrical Signal Transmission in the Presence of Noise, IL, Moscow, 1953) (Ref. 7 - P. Elias - Proc. IRE, 39, 839, 1951):

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

$$C = \lim_{T \to \infty} \left[\frac{1}{T} \log M^{1/2} \right] \qquad (7)$$

where M is the correlation matrix of the output signal:

$$|M| = \begin{vmatrix} \overline{v_1 v_2} \dots \overline{v_1 v_N} \\ \dots\dots \\ \overline{v_N v_1} \dots \overline{v_N v_N} \end{vmatrix}$$

where v_j are the values of the output signal at the sampling time intervals. On the basis of Eq. (7) it is possible to express the channel-information capacity in terms of the spectral functions of the signal (Ref. 2 - Cybernetics. izd. Sov. radio, M., 1958 - N.Wiener; Ref. 8 - Dokl. Ak.nauk SSSR, 99, 213, 1954 - M.S. Pinsker):

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

$$C = \frac{1}{T} \log \prod_{j}^{N} \left(1 + \frac{|y(f_j)|^2}{|z(f_j)|^2}\right) = \frac{1}{T} \sum_{j=1}^{n} \log \left(1 + \frac{|y(f_j)|^2}{|z(f_j)|^2}\right), \tag{8}$$

where $|y(f_j)|^2$ and $|z(f_j)|^2$ are spectral densities of the signals $y(t)$ and $z(t)$. If the signal and noise spectra (σ_x^2 and σ_z^2) are independent of frequency, Eqs. (7) and (8) can be written as:

$$C = F \log\left(1 + \frac{\sigma_y^2}{\sigma_z^2}\right) + \lim_{T \to \infty} \left[\frac{1}{T} \log |R|^{1/2}\right]; \tag{7a}$$

$$C = \int_0^F \log\left(1 + \frac{\sigma_y^2}{\sigma_z^2} \frac{|k(f)|^2}{\frac{1}{F}\int_0^F |k(f)|^2 df}\right) df. \tag{8a}$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

where R is the matrix of the correlation coefficients of the signal at the output of the channel (corresponding to the matrix M). In the case of a two-path propagation, it can be assumed that the signals received have amplitudes a_1 and a_2 and that the relative delay time is τ, The frequency characteristic of this channel is:

$$|k(f)|^2 = a_1^2 + a_2^2 + 2a_1a_2\cos(2\pi f\tau) \qquad (13)$$

so that the channel capacity is given by:

$$C = \int_0^F \log[1 + \alpha(a_1^2 + a_2^2) + 2\alpha\, a_1a_2\cos(2\pi f\tau)]df \qquad (14)$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

where $\alpha = \sigma_x^2/\sigma_z^2$. The effect of two-path propagation is illustrated in Eig. 2, where F is the bandwidth of the transmission channel. The channel capacity of a system with n-path propagation, having a maximum delay time T_p and spectral distribution for the amplitude of the received signal K(f), is also investigated and it is shown that in this case the capacity is expressed by:

$$C = -\frac{Fe^{\sigma_z^2/\sigma_y^2}}{\ln 2} \mathrm{Ei}\left(-\frac{\sigma_z^2}{\sigma_y^2}\right) \qquad (19)$$

where Ei(x) is the integral exponential function which can be represented in the form of the following series:

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

$$Ei(x) = c + \ln(-x) + \frac{x}{1.1!} + \frac{x^2}{2.2!} + \dots + \frac{x^n}{n.n!} + \dots \qquad (20)$$

$$(x < 0)$$

where $c = 0.57$. On the other hand, for an n-path propagation channel the rate of information-transmission is a minimum if the energies transmitted to the receiver by various paths are equal and the signal delays along the various paths are the same. The frequency characteristic of such a channel is given by:

$$|k(f)|^2 = |\sin(\pi n f \tau)/\sin(\pi f \tau)|^2 \qquad (23)$$

where τ is the delay time and its capacity is expressed by:

$$C = F \log(a^2/\sigma_z^2) + \int_0^F \log|\sin(\pi n \tau f)/\sin(\pi \tau f)|\, df \qquad (24).$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

In general, the signal at the output of a multipath propagation channel, which is defined by Eq. (4), has fluctuation amplitudes a_r and delay times τ_r. Due to the presence of a large number of interfering paths or rays, it can be assumed that the changes of the transfer function for the channel at various frequencies are independent. The frequency interval ν_o for the correlation of these changes is dependent on the reverberation time T_p; this is defined by:

$$\nu_o = 1/T_p \qquad (26)$$

The qualitative estimate of a multipath communications channel with variable parameters can be estimated on the basis of the work of Feinstein (Ref. 6), who gave a formula for the capacity of a channel whose output signal was in the form:

$$v(t) = K(t)y(t) + z(t) \qquad (27)$$

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

where K(t) is a random modulation function having the normal probability distribution. The formula for the information-transmission rate is in the form:

$$C = \Delta f \log \left\{ 1 + \frac{\sigma_y^2}{\sigma_z^2 + \overline{K}^2 \sigma_y^2 / [1 + \overline{K}^2 (q-1) \sigma_y^2/\sigma_z^2]} \right\}. \quad (28)$$

where Δf is the bandwidth of the signal frequencies,

$\overline{K}^2$ is the mean square value of the fluctuations of K(t),

q is the number of sampling points for the signal at which the values of K(t) are correlated.

It can easily be shown that:

$$q = \Delta f T_{\text{ФЛ}} \quad (29)$$

where $T_{\text{ФЛ}}$ is the autocorrelation interval for the modulating function K(t) .

Card 10/13 12

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

A multipath channel with variable parameters can be split into a number of sub-channels, whose bandwidths are less than the frequency interval o . The capacity can be expressed by:

$$C = \int_0^F \log \left\{ 1 + \frac{\sigma_y^2 K_f^2}{\sigma_z^2 + \bar{K}^2 \sigma_y^2 K_f^2 / \left[1 + \bar{K}^2 (q - 1) \sigma_y^2 K_f^2 / \sigma_z^2 \right]} \right\} df. \qquad (30)$$

provided the interaction between the neighbouring sub-channels is disregarded. On the basis of the above formulae, it is concluded that in a channel with constant parameters, the presence of many propagation paths does not reduce the capacity of the channel; in most cases, the channel capacity is equal to the capacity of a single-path channel whose energy is equal to the total energy of all the "paths" transmitted to the receiver. On the other hand, the occurrence of the equidistance distribution of delay times is very improbable in normal conditions. In the case of a channel with variable parameters, the fluctuations of the parameters have a significant effect

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

S/141/61/004/002/008/017

Information-transmission Rate ... E192/E382

on the channel capacity: the capacity is dependent on the width of the spectrum and the magnitude of the changes of the transfer function of the channel. The capacity of a multipath communications channel can be determined if the following quantities are known: correlation in the signal produced by the multipath propagation; time and frequency correlation of the amplitude fluctuations of the received signal and the width of the spectrum at the output of the channel when a sinusoidal signal is applied at the input.

There are 3 figures and 8 references: 6 Soviet and 2 non-Soviet. Two of the Soviet references are translated from English.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute of Gor'kiy University)

SUBMITTED: September 22, 1960

Card 12/13 12

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

ZVEREV, Vitaliy Anatol'yevich, dots.

[Theory of probability with a supplement to information theory; textbook for students of the second and third year of the faculty of radio physics] Teoriia veroiatnostei s prilozheniem k teorii informatsii; uchebnoe posobie dlia studentov II i III kursov radiofizicheskogo fakul'teta. Gor'-kii, Gor'kovskii gos. univ. im. N.I.Lobashevskogo. Nos. 1-3. 1961. 123 p. (MIRA 17:4)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

30048

3.5140 (1041)

S/046/61/007/004/003/014
B139/B102

AUTHORS: Zverev, V. A., Spiridonova, I. K.

TITLE: Determination of atmospheric turbulence characteristics on the basis of statistical sound-field analysis

PERIODICAL: Akusticheskiy zhurnal, v. 7, no. 4, 1961, 428-435

TEXT: Phase and amplitude fluctuations occurring in the propagation of sound waves in the atmosphere are caused by inhomogeneities. The authors developed a method for the determination of atmospheric inhomogeneities and mean squares of phase fluctuations by measuring the correlation coefficient of a sound field in the atmosphere. L. A. Chernov (Akust. zh., 1957, 3, 2, 192-194) established a relation between the field correlation function and the autocorrelation functions of amplitude and phase fluctuations for the case of crosscorrelation:

$$\overline{E_1 E_2} = E_o^2 \exp(2A^2) \exp\left[\overline{A^2}\,(R_A - 1) + \overline{\varphi^2}\,(R_\varphi - 1)\right] \qquad (2),$$

1X

where E is the field, A is the amplitude fluctuation, φ is the phase

Card 1/4

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

fluctuation, R_A and R_φ are the correlation coefficients of amplitude and phase fluctuations, respectively. The authors determined the field correlation caused only by a phase fluctuation. In this case (A = 0),

$$\ln R_E = \overline{\varphi^2}\,(R_\varphi - 1) \qquad (5)$$

X

is valid. For $d \ll a$, and considering that, in the case of crosscorrelation $R_\varphi = \exp(-d^2/a^2)$, Eq. (5) goes over into

$$\ln R_E = -\overline{\varphi^2}\,\frac{d^2}{a^2} \qquad (8).$$

d is the base, and a is the dimension of inhomogeneities. If, however, $d \gg a$, $\ln R_E = -\overline{\varphi^2}$. $\ln R_E = f(d^2)$ is a straight line which passes through the origin and forms an angle α with the abscissa: $a = \sqrt{\overline{\varphi^2}\tan\alpha}$.
K. A. Norton calculated R_E from the curve $\rho k_1 = f(\rho)$ ($\rho = d/a$), and

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

30048

S/046/61/007/004/003/014

obtained $\ln R_E = \frac{\varphi^2}{2\alpha^2} d^2$ for $d \ll a$ (14)

and $\ln R_E = -\overline{\varphi^2}$ for $d \gg a$ (15).

If only the statistical parameters a and $\overline{\varphi^2}$ of the medium are to be calculated, the results obtained by the two methods are in good agreement. However, theoretical considerations support Norton's method and the values obtained by this theory. $R_E(d)$ is difficult to determine, since measurement results obtained at different times are influenced by the turbulence of the medium. The authors, however, made simultaneous measurements at several points, along the direction of sound-field propagation and also at right angles to it. Waves were recorded by several receivers on a four-channel magnetic tape, and the signals were evaluated in the laboratory: Signals from two channels were fed by amplifiers into two dynamic loudspeakers. Each loudspeaker was installed in a tube (to isolate the signals) with a microphone at the other end. One microphone was fixed, while the other was moved in the direction of

X

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

30048
S/046/61/007/004/003/014
Determination of atmospheric turbulence ...B139/B102

wave propagation. Via amplifiers the signals were fed from the microphones to the two correlometer inputs, and the signals from the correlometers were fed into a loop oscilloscope. L. A. Chernov, Rasprostraneniye voln v srede so sluchaynymi neodnorodnostyami. M., Izd-vo AN SSSR, 1958 is mentioned. There are 8 figures and 10 references: 9 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: K. A. Norton, J. atm. and ter. phys. 1959, 15, nos. 3/4, 206-227.

ASSOCIATION: Radiofizicheskiy institut pri Gor'kovskom gosudarstvennom universitete (Radiophysical Institute of Gor'kiy State University)

SUBMITTED: January 16, 1961

X

Card 4/4

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

35785

24.3300

S/120/62/000/001/026/061
E140/E463

AUTHORS: Zverev, V.A., Mosalov, I.V., Orlov, Ye.F., Sibiryakov, V.L.

TITLE: Spectrum analyser for film-recorded processes

PERIODICAL: Pribory i tekhnika eksperimenta, no.1, 1962, 110-117

TEXT: The authors describe a variation of the well-known optical spectrum analyser in which a periodic mask (filter) is passed before a density (or amplitude) variable negative of the process to be analysed. The disadvantages of the existing systems are the large number of filter transparencies required, the long time for a full analysis, lack of precision in the preparation of the filters and the impossibility of obtaining the spectral density at a given frequency. The authors therefore have proposed and realized an improved system using two mutually inclined diffraction gratings (Fig.3). Assuming the gratings to be sinusoidal (in the first approximation), the transmissibilities of the gratings are described by

$$A + B \cos \left[(2\pi/d)(x \cos \alpha + y \sin \alpha) - \varphi_1\right] \quad (1)$$

$$A + B \cos \left[(2\pi/d)(x \cos \alpha - y \sin \alpha) - \varphi_2\right] \quad (2)$$

Card 1/5

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

Since the light passes successively through the two gratings, the light flux at the output of the second grating will be the product of (1) and (2). Now, if we let the gratings vibrate with common amplitude a and frequency Ω in phase opposition, and in the directions α and $-\alpha$, the photoelement current will have a component proportional to the spectral density of the investigated function. As the angle α varies from 0 to 30° all values of spectral density will be obtained with periods between D (the window width, fundamental frequency) up to d (the grating period). The frequency Ω determines the rate at which the results are obtained. The possibility exists of varying α manually, thus permitting interesting frequency components to be found rapidly. The use of narrow band amplifiers tuned to some harmonic of Ω is useful in filtering out closely related components. The maximum intensity is that of the harmonic with index close to $a/d \gg 1$. The output is to a self-balancing potentiometer, with the lateral displacement of the paper controlled by a special follower servomechanism to give a scale proportional to frequency as the angle α is varied. In the

Card 2/~~4~~ 3

4

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

instrument constructed the grating period is d = 0.2 mm, the maximum relative angle of rotation is 14°10', the window D = 100 mm. The resolution permits harmonics of D up to index 250 to be measured. Some test spectrograms of multi-frequency sinusoidal signals are given. There are 9 figures.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri GGU (Scientific Research Institute of Radiophysics of GGU)

SUBMITTED: March 6, 1961

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065710009-1"

35257

S/046/62/008/001/003/018
B139/B102

24,1300

AUTHORS: Andreyev, G. A., Zverev, V. A.

TITLE: Method of investigating the statistical properties of media with random inhomogeneities by means of continuous frequency-modulated acoustic irradiation

PERIODICAL: Akusticheskiy zhurnal, v. 8, no. 1, 1962, 42 - 48

TEXT: When investigating the propagation of waves in static inhomogeneous media, the characteristics of inhomogeneities and the signal parameter changes caused by them must be known. The authors conducted experiments with saw-tooth sound waves. The signals arriving at the receiver are delayed against the carrier wave by the time $\theta_i(t) = 2r_i(t)/c$ ($r_i(t)$ = distance between the i-th elementary scattering space and the sound pickup). The correlation function of the sum of signals equals the sum of correlation functions of the summands, i.e.,

$\psi_u(\tau) = \overline{u(t)u(t+\tau)} = \sum_{i=1}^{N} \overline{u_i(t)u_i(t+\tau)}$ (3). Via the expression

X

Card 1/3